<210> 1773
<211> 614
<212> PRT
<213> Homo sapiens

<400> 1773

```
Met Gly Ala Leu Arg Pro Thr Leu Leu Pro Pro Ser Leu Pro Leu Leu
 1               5                  10                  15
Leu Leu Leu Met Leu Gly Met Gly Cys Trp Ala Arg Glu Val Leu Val
            20                  25                  30
Pro Glu Gly Pro Leu Tyr Arg Val Ala Gly Thr Ala Val Ser Ile Ser
        35                  40                  45
Cys Asn Val Thr Gly Tyr Glu Gly Pro Ala Gln Gln Asn Phe Glu Trp
    50                  55                  60
Phe Leu Tyr Arg Pro Glu Ala Pro Asp Thr Ala Leu Gly Ile Val Ser
65                  70                  75                  80
Thr Lys Asp Thr Gln Phe Ser Tyr Ala Val Phe Lys Ser Arg Val Val
                85                  90                  95
Ala Gly Glu Val Gln Val Gln Arg Leu Gln Gly Asp Ala Val Val Leu
            100                 105                 110
Lys Ile Ala Arg Leu Gln Ala Gln Asp Ala Gly Ile Tyr Glu Cys His
        115                 120                 125
Thr Pro Ser Thr Asp Thr Arg Tyr Leu Gly Ser Tyr Ser Gly Lys Val
    130                 135                 140
Glu Leu Arg Val Leu Pro Asp Val Leu Gln Val Ser Ala Ala Pro Pro
145                 150                 155                 160
Gly Pro Arg Gly Arg Gln Ala Pro Thr Ser Pro Pro Arg Met Thr Val
                165                 170                 175
His Glu Gly Gln Glu Leu Ala Leu Gly Cys Leu Ala Arg Thr Ser Thr
            180                 185                 190
Gln Lys His Thr His Leu Ala Val Ser Phe Gly Arg Ser Val Pro Glu
        195                 200                 205
Ala Pro Val Gly Arg Ser Thr Leu Gln Glu Val Val Gly Ile Arg Ser
    210                 215                 220
Asp Leu Ala Val Glu Ala Gly Ala Pro Tyr Ala Glu Arg Leu Ala Ala
225                 230                 235                 240
Gly Glu Leu Arg Leu Gly Lys Glu Gly Thr Asp Arg Tyr Arg Met Val
                245                 250                 255
Val Gly Gly Ala Gln Ala Gly Asp Ala Gly Thr Tyr His Cys Thr Ala
            260                 265                 270
Ala Glu Trp Ile Gln Asp Pro Asp Gly Ser Trp Ala Gln Ile Ala Glu
        275                 280                 285
Lys Arg Ala Val Leu Ala His Val Asp Val Gln Thr Leu Ser Ser Gln
    290                 295                 300
Leu Ala Val Thr Val Gly Pro Gly Glu Arg Arg Ile Gly Pro Gly Glu
305                 310                 315                 320
Pro Leu Glu Leu Leu Cys Asn Val Ser Gly Ala Leu Pro Pro Ala Gly
                325                 330                 335
Arg His Ala Ala Tyr Ser Val Gly Trp Glu Met Ala Pro Ala Gly Ala
            340                 345                 350
Pro Gly Pro Gly Arg Leu Val Ala Gln Leu Asp Thr Glu Gly Val Gly
        355                 360                 365
Ser Leu Gly Pro Gly Tyr Glu Gly Arg His Ile Ala Met Glu Lys Val
```

```
    370                 375                 380
Ala Ser Arg Thr Tyr Arg Leu Arg Leu Glu Ala Ala Arg Pro Gly Asp
385                 390                 395                 400
Ala Gly Thr Tyr Arg Cys Leu Ala Lys Ala Tyr Val Arg Gly Ser Gly
                405                 410                 415
Thr Arg Leu Arg Glu Ala Ala Ser Ala Arg Ser Arg Pro Leu Pro Val
            420                 425                 430
His Val Arg Glu Glu Gly Val Val Leu Glu Ala Val Ala Trp Leu Ala
        435                 440                 445
Gly Gly Thr Val Tyr Arg Gly Glu Thr Ala Ser Leu Leu Cys Asn Ile
    450                 455                 460
Ser Val Arg Gly Gly Pro Pro Gly Leu Arg Leu Ala Ala Ser Trp Trp
465                 470                 475                 480
Val Glu Arg Pro Glu Asp Gly Glu Leu Ser Ser Val Pro Ala Gln Leu
                485                 490                 495
Val Gly Gly Val Gly Gln Asp Gly Val Ala Glu Leu Gly Val Arg Pro
            500                 505                 510
Gly Gly Gly Pro Val Ser Val Glu Leu Val Gly Pro Arg Ser His Arg
        515                 520                 525
Leu Arg Leu His Ser Leu Gly Pro Glu Asp Glu Gly Val Tyr His Cys
    530                 535                 540
Ala Pro Ser Ala Trp Val Gln His Ala Asp Tyr Ser Trp Tyr Gln Ala
545                 550                 555                 560
Gly Ser Ala Arg Ser Gly Pro Val Thr Val Tyr Pro Tyr Met His Ala
                565                 570                 575
Leu Asp Thr Leu Phe Val Pro Leu Leu Val Gly Thr Gly Val Ala Leu
            580                 585                 590
Val Thr Gly Ala Thr Val Leu Gly Thr Ile Thr Cys Cys Phe Met Lys
        595                 600                 605
Arg Leu Arg Lys Arg  *
    610             613
```

<210> 1774
<211> 156
<212> PRT
<213> Homo sapiens

<400> 1774

```
Met Glu Ala Leu Thr Leu Trp Leu Leu Pro Trp Ile Cys Gln Cys Val
  1               5                  10                  15
Ser Val Arg Ala Asp Ser Ile Ile His Ile Gly Ala Ile Phe Glu Glu
            20                  25                  30
Asn Ala Ala Lys Asp Asp Arg Val Phe Gln Leu Ala Val Ser Asp Leu
        35                  40                  45
Ser Leu Asn Asp Asp Ile Leu Gln Ser Glu Lys Ile Thr Tyr Ser Ile
    50                  55                  60
Lys Val Ile Glu Ala Asn Asn Pro Phe Gln Ala Val Gln Glu Ala Cys
65                  70                  75                  80
Asp Leu Met Thr Gln Gly Ile Leu Ala Leu Val Thr Ser Thr Gly Cys
                85                  90                  95
Ala Ser Ala Asn Ala Leu Gln Ser Leu Thr Asp Ala Met His Ile Pro
            100                 105                 110
His Leu Phe Val Gln Arg Asn Pro Gly Gly Ser Pro Arg Thr Ala Cys
        115                 120                 125
His Leu Asn Pro Ser Pro Asp Gly Glu Ala Tyr Thr Leu Ala Ser Arg
    130                 135                 140
```

Pro Pro Val Arg Leu Asn Asp Val Met Leu Arg Leu
145 150 155 156

<210> 1775
<211> 896
<212> PRT
<213> Homo sapiens

<400> 1775
Met Gln Lys Ala Ser Val Leu Leu Phe Leu Ala Trp Val Cys Phe Leu
1 5 10 15
Phe Tyr Ala Gly Ile Ala Leu Phe Thr Ser Gly Phe Leu Leu Thr Arg
20 25 30
Leu Glu Leu Thr Asn His Ser Ser Cys Gln Glu Pro Pro Gly Pro Gly
35 40 45
Ser Leu Pro Trp Gly Ser Gln Gly Lys Pro Gly Ala Cys Trp Met Ala
50 55 60
Ser Arg Phe Ser Arg Val Val Leu Val Leu Ile Asp Ala Leu Arg Phe
65 70 75 80
Asp Phe Ala Gln Pro Gln His Ser His Val Pro Arg Glu Pro Pro Val
85 90 95
Ser Leu Pro Phe Leu Gly Lys Leu Ser Ser Leu Gln Arg Ile Leu Glu
100 105 110
Ile Gln Pro His His Ala Arg Leu Tyr Arg Ser Gln Val Asp Pro Pro
115 120 125
Thr Thr Thr Met Gln Arg Leu Lys Ala Leu Thr Thr Gly Ser Leu Pro
130 135 140
Thr Phe Ile Asp Ala Gly Ser Asn Phe Ala Ser His Ala Ile Val Glu
145 150 155 160
Asp Asn Leu Ile Lys Gln Leu Thr Ser Ala Gly Arg Arg Val Val Phe
165 170 175
Met Gly Asp Asp Thr Trp Lys Asp Leu Phe Pro Gly Ala Phe Ser Lys
180 185 190
Ala Phe Phe Phe Pro Ser Phe Asn Val Arg Asp Leu Asp Thr Val Asp
195 200 205
Asn Gly Ile Leu Glu His Leu Tyr Pro Thr Met Asp Ser Gly Glu Trp
210 215 220
Asp Val Leu Ile Ala His Phe Leu Gly Val Asp His Cys Gly His Lys
225 230 235 240
His Gly Pro His His Pro Glu Met Ala Lys Lys Leu Ser Gln Met Asp
245 250 255
Gln Val Ile Gln Gly Leu Val Glu Arg Leu Glu Asn Asp Thr Leu Leu
260 265 270
Val Val Ala Gly Asp His Gly Met Thr Thr Asn Gly Asp His Gly Gly
275 280 285
Asp Ser Glu Leu Glu Val Ser Ala Ala Leu Phe Leu Tyr Ser Pro Thr
290 295 300
Ala Val Phe Pro Ser Thr Pro Pro Glu Glu Pro Glu Val Ile Pro Gln
305 310 315 320
Val Ser Leu Val Pro Thr Leu Ala Leu Leu Leu Gly Leu Pro Ile Pro
325 330 335
Phe Gly Asn Ile Gly Glu Val Met Ala Glu Leu Phe Ser Gly Gly Glu
340 345 350
Asp Ser Gln Pro His Ser Ser Ala Leu Ala Gln Ala Ser Ala Leu His
355 360 365
Leu Asn Ala Gln Gln Val Ser Arg Phe Phe His Thr Tyr Ser Ala Ala

370 375 380
Thr Gln Asp Leu Gln Ala Lys Glu Leu His Gln Leu Gln Asn Leu Phe
385 390 395 400
Ser Lys Ala Ser Ala Asp Tyr Gln Trp Leu Leu Gln Ser Pro Lys Gly
405 410 415
Ala Glu Ala Thr Leu Pro Thr Val Ile Ala Glu Leu Gln Gln Phe Leu
420 425 430
Arg Gly Ala Arg Ala Met Cys Ile Glu Ser Trp Ala Arg Phe Ser Leu
435 440 445
Val Arg Met Ala Gly Gly Thr Ala Leu Leu Ala Ala Ser Cys Phe Ile
450 455 460
Cys Leu Leu Ala Ser Gln Trp Ala Ile Ser Pro Gly Phe Pro Phe Cys
465 470 475 480
Pro Leu Leu Leu Thr Pro Val Ala Trp Gly Leu Val Gly Ala Ile Ala
485 490 495
Tyr Ala Gly Leu Leu Gly Thr Ile Glu Leu Lys Leu Asp Leu Val Leu
500 505 510
Leu Gly Ala Val Ala Ala Val Ser Ser Phe Leu Pro Phe Leu Trp Lys
515 520 525
Ala Trp Ala Gly Trp Gly Ser Lys Arg Pro Leu Ala Thr Leu Phe Pro
530 535 540
Ile Pro Gly Pro Val Leu Leu Leu Leu Leu Phe Arg Leu Ala Val Phe
545 550 555 560
Phe Ser Asp Ser Phe Val Val Ala Glu Ala Arg Ala Thr Pro Phe Leu
565 570 575
Leu Gly Ser Phe Ile Leu Leu Leu Val Val Gln Leu His Trp Glu Gly
580 585 590
Gln Leu Leu Pro Pro Lys Leu Leu Thr Met Pro Arg Leu Gly Thr Ser
595 600 605
Ala Thr Thr Asn Pro Pro Arg His Asn Gly Ala Tyr Ala Leu Arg Leu
610 615 620
Gly Ile Gly Leu Leu Leu Cys Thr Arg Leu Ala Gly Leu Phe His Arg
625 630 635 640
Cys Pro Glu Glu Thr Pro Val Cys His Ser Ser Pro Trp Leu Ser Pro
645 650 655
Leu Ala Ser Met Val Gly Gly Arg Ala Lys Asn Leu Trp Tyr Gly Ala
660 665 670
Cys Val Ala Ala Leu Val Ala Leu Leu Ala Ala Val Arg Leu Trp Leu
675 680 685
Arg Arg Tyr Gly Asn Leu Lys Ser Pro Glu Pro Pro Met Leu Phe Val
690 695 700
Arg Trp Gly Leu Pro Leu Met Ala Leu Gly Thr Ala Ala Tyr Trp Ala
705 710 715 720
Leu Ala Ser Gly Ala Asp Glu Ala Pro Pro Arg Leu Arg Val Leu Val
725 730 735
Ser Gly Ala Ser Met Val Leu Pro Arg Ala Val Ala Gly Leu Ala Ala
740 745 750
Ser Gly Leu Ala Leu Leu Leu Trp Lys Pro Val Thr Val Leu Val Lys
755 760 765
Ala Gly Ala Gly Ala Pro Arg Thr Arg Thr Val Leu Thr Pro Phe Ser
770 775 780
Gly Pro Pro Thr Ser Gln Ala Asp Leu Asp Tyr Val Val Pro Gln Ile
785 790 795 800
Tyr Arg His Met Gln Glu Glu Phe Arg Gly Arg Leu Glu Arg Thr Lys
805 810 815
Ser Gln Gly Pro Leu Thr Val Ala Ala Tyr Gln Leu Gly Ser Val Tyr
820 825 830
Ser Ala Ala Met Val Thr Ala Leu Thr Leu Leu Ala Phe Pro Leu Leu
835 840 845

```
Leu Leu His Ala Glu Arg Ile Ser Leu Val Phe Leu Leu Leu Phe Leu
    850                 855                 860
Gln Ser Phe Leu Leu Leu His Leu Leu Ala Ala Gly Ile Pro Val Thr
865                 870                 875                 880
Thr Pro Gly Lys Tyr Leu Ser Ser Asp Ser Leu Lys Asp Asn Ser Asp
                885                 890                 895 896
```

<210> 1776
<211> 178
<212> PRT
<213> Homo sapiens

<400> 1776

```
Met Trp Ala Cys Trp Cys Val Leu Gly Thr Pro Gly Val Ala Met Val
  1               5                  10                  15
Leu Leu His Thr Thr Ile Ser Phe Cys Val Ala Gln Phe Arg Ser Gln
            20                  25                  30
Leu Leu Thr Trp Leu Cys Ser Leu Leu Leu Leu Ser Thr Leu Arg Leu
        35                  40                  45
Gln Gly Val Glu Glu Val Lys Arg Arg Trp Tyr Lys Thr Glu Asn Glu
    50                  55                  60
Tyr Tyr Leu Leu Gln Phe Thr Leu Thr Val Arg Cys Leu Tyr Tyr Thr
65                  70                  75                  80
Ser Phe Ser Leu Glu Leu Cys Trp Gln Gln Leu Pro Ala Ala Ser Thr
                85                  90                  95
Ser Tyr Ser Phe Pro Trp Met Leu Ala Tyr Val Phe Tyr Tyr Pro Val
            100                 105                 110
Leu His Asn Gly Pro Ile Leu Ser Phe Ser Glu Phe Ile Lys Gln Arg
        115                 120                 125
Ser Gln Trp Ser Asn Arg Glu Phe Gly Met Glu Val Glu Ser Lys Gly
    130                 135                 140
Pro Gly Ala His Pro Pro Gly Phe Glu Ser Leu Leu Cys Phe Gly Leu
145                 150                 155                 160
Arg Val Leu Ala Glu Leu Leu Thr Leu Leu Met Pro Gln Ser Ser Tyr
                165                 170                 175
Gln  *
177
```

<210> 1777
<211> 59
<212> PRT
<213> Homo sapiens

<400> 1777

```
Met Pro Thr Tyr Trp Leu Ala Asn Leu Arg Pro Gly Leu Gln Pro Phe
  1               5                  10                  15
Leu Leu His Phe Leu Leu Glu Trp Leu Ala Val Phe Cys Cys Lys Ile
            20                  25                  30
Met Val Leu Ala Ala Ala Gly Leu Leu Pro Thr Leu His Met Ala Ser
        35                  40                  45
Phe Phe Ser Asn Ala Leu Tyr Asn Cys Phe Tyr
```

50 55 59

<210> 1778
<211> 137
<212> PRT
<213> Homo sapiens

<400> 1778

```
Met Val Ala Pro Gly Leu Val Leu Gly Leu Val Leu Pro Leu Ile Leu
 1               5                  10                  15
Trp Ala Asp Arg Ser Ala Gly Ile Gly Phe Arg Phe Ala Ser Tyr Ile
            20                  25                  30
Asn Asn Asp Met Val Leu Gln Lys Glu Pro Ala Gly Ala Val Ile Trp
        35                  40                  45
Gly Phe Gly Thr Pro Gly Ala Thr Val Thr Val Thr Leu Arg Gln Gly
    50                  55                  60
Gln Glu Thr Ile Met Lys Lys Val Thr Ser Val Lys Ala His Ser Asp
65                  70                  75                  80
Thr Trp Met Val Val Leu Asp Pro Met Lys Pro Gly Gly Pro Phe Glu
                85                  90                  95
Val Met Ala Gln Gln Thr Leu Glu Lys Ile Asn Phe Thr Leu Arg Val
            100                 105                 110
His Asp Val Leu Phe Gly Asp Val Trp Leu Cys Ser Gly Gln Ser Asn
        115                 120                 125
Met Gln Met Thr Val Leu Gln Ile Phe
    130                 135     137
```

<210> 1779
<211> 65
<212> PRT
<213> Homo sapiens

<400> 1779

```
Met Lys Val Phe Phe Leu Asp Glu Ser Trp Pro Gln Trp Arg Phe Ala
 1               5                  10                  15
Ala Gly Leu Leu Ala Leu Ser Phe Gly Gly Pro Ala Trp Lys Phe Leu
            20                  25                  30
Ser Val Gln Arg Val Ile Pro Trp Leu Trp Ala Ala Lys Glu Lys Pro
        35                  40                  45
Leu Gly Pro Leu Ala Thr Pro Pro Arg Leu Asn Pro Lys Val Gly Val
    50                  55                  60                  64
*
```

<210> 1780
<211> 53
<212> PRT
<213> Homo sapiens

<400> 1780

```
Met Phe His Cys Tyr Trp Phe Arg Cys Leu Ser Pro Gln Thr Leu Leu
 1               5                  10                  15
Cys Lys Cys Phe Ser Lys Gly Arg Thr Asp Trp Asn Cys Gly Ser Ala
            20                  25                  30
Arg Ser His Ser Phe Gln Ser His Phe Phe Ser Ala Ala Leu Ser Ser
        35                  40                  45
Cys Gly Thr Leu  *
    50      52
```

<210> 1781
<211> 109
<212> PRT
<213> Homo sapiens

<400> 1781

```
Met Met His Asn Ile Ile Val Lys Glu Leu Ile Val Thr Phe Phe Leu
 1               5                  10                  15
Gly Ile Thr Val Val Gln Met Leu Ile Ser Val Thr Gly Leu Lys Gly
            20                  25                  30
Val Glu Ala Gln Asn Gly Ser Glu Ser Glu Val Phe Val Gly Lys Tyr
        35                  40                  45
Glu Thr Leu Val Phe Tyr Trp Pro Ser Leu Leu Cys Leu Ala Phe Leu
    50                  55                  60
Leu Gly Arg Phe Leu His Met Phe Val Lys Ala Leu Arg Val His Leu
65                  70                  75                  80
Gly Trp Glu Leu Gln Val Glu Glu Lys Ser Val Leu Glu Val His Gln
                85                  90                  95
Gly Glu His Val Lys Gln Leu Leu Arg Ile Pro Arg Pro
            100                 105                 109
```

<210> 1782
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1782

```
Met Ala Ser Thr Trp Ser Leu Glu Arg Val Gly Thr Cys Leu Pro Cys
 1               5                  10                  15
Gly Phe Gly Thr Trp Gln Ser Thr Ala Arg Trp Pro Ser Cys Arg Ser
            20                  25                  30
Thr Ser Met Val Trp Leu Val Trp Pro Ser Leu Leu Ala Pro Ser Thr
        35                  40                  45
Leu Ser Leu Trp Ala Thr Ser Met Thr  *
    50                  55      57
```

<210> 1783
<211> 102
<212> PRT
<213> Homo sapiens

<400> 1783
Met Leu Ile Pro His Gln Leu Pro Leu Cys Ser Pro Trp Leu Val Gln
1 5 10 15
Ala Met Leu Thr Ile Glu Val Pro Trp Leu Leu Gly Leu Ala His Tyr
20 25 30
Arg Leu Gly Trp His Ala Leu Glu Gly Ile Phe Trp Trp Gly Ala Ser
35 40 45
Val Phe His Ala Leu Gln Ala Met Leu Val Arg Lys Trp Pro Leu Gly
50 55 60
Leu Val Glu Phe Thr Gly Thr Cys Gly Ile Leu Val Glu Val Ile Gly
65 70 75 80
Leu Trp Trp Gly Glu Gly Ser Thr Gly Asn Arg Trp Met Gly Leu Asn
85 90 95
Ser Thr Gly Gly Gln *
100 101

<210> 1784
<211> 243
<212> PRT
<213> Homo sapiens

<400> 1784
Met Gly Glu Ala Ser Pro Pro Ala Pro Ala Arg Arg His Leu Leu Val
1 5 10 15
Leu Leu Leu Leu Leu Ser Thr Leu Val Ile Pro Ser Ala Ala Ala Pro
20 25 30
Ile His Asp Ala Asp Ala Gln Glu Ser Ser Leu Gly Leu Thr Gly Leu
35 40 45
Gln Ser Leu Leu Gln Gly Phe Ser Arg Leu Phe Leu Lys Gly Asn Leu
50 55 60
Leu Arg Gly Ile Asp Ser Leu Phe Ser Ala Pro Met Asp Phe Arg Gly
65 70 75 80
Leu Pro Gly Asn Tyr His Lys Glu Glu Asn Gln Glu His Gln Leu Gly
85 90 95
Asn Asn Thr Leu Ser Ser His Leu Gln Ile Asp Lys Met Thr Asp Asn
100 105 110
Lys Thr Gly Glu Val Leu Ile Ser Glu Asn Val Val Ala Ser Ile Gln
115 120 125
Pro Ala Glu Gly Ser Phe Glu Gly Asp Leu Lys Val Pro Arg Met Glu
130 135 140
Glu Lys Glu Ala Leu Val Pro Ile Gln Lys Ala Thr Asp Ser Phe His
145 150 155 160
Thr Glu Leu His Pro Arg Val Ala Phe Trp Ile Ile Lys Leu Pro Arg
165 170 175
Arg Arg Ser His Gln Asp Ala Leu Glu Gly Gly His Trp Leu Ser Glu
180 185 190
Lys Arg His Arg Leu Gln Ala Ile Arg Asp Gly Leu Arg Lys Gly Thr
195 200 205
His Lys Asp Val Leu Glu Glu Gly Thr Glu Ser Ser Ser His Ser Arg
210 215 220
Leu Ser Pro Arg Lys Thr His Leu Leu Tyr Ile Leu Arg Pro Ser Arg
225 230 235 240
Gln Leu *
242

<210> 1785
<211> 158
<212> PRT
<213> Homo sapiens

<400> 1785

```
Met Lys Ala Leu Leu Leu Leu Val Leu Pro Trp Leu Ser Pro Ala Asn
  1               5                  10                  15
Tyr Ile Asp Asn Val Gly Asn Leu His Phe Leu Tyr Ser Glu Leu Cys
            20                  25                  30
Lys Gly Ala Ser His Tyr Gly Leu Thr Lys Asp Arg Lys Arg Arg Ser
        35                  40                  45
Gln Asp Gly Cys Pro Asp Gly Cys Ala Ser Leu Thr Ala Thr Ala Pro
    50                  55                  60
Ser Pro Glu Val Ser Ala Ala Ala Thr Ile Ser Leu Met Thr Asp Glu
65                  70                  75                  80
Pro Gly Leu Asp Asn Pro Ala Tyr Val Ser Ser Ala Glu Asp Gly Gln
                85                  90                  95
Pro Ala Ile Ser Pro Val Asp Ser Gly Arg Ser Asn Arg Thr Arg Ala
            100                 105                 110
Arg Pro Phe Glu Arg Ser Thr Ile Ile Ser Arg Ser Phe Lys Lys Ile
        115                 120                 125
Asn Arg Ala Leu Ser Val Leu Arg Arg Thr Lys Ser Gly Ser Ala Val
    130                 135                 140
Ala Asn His Ala Asp Gln Gly Arg Glu Asn Ser Glu Asn Thr
145                 150                 155         158
```

<210> 1786
<211> 142
<212> PRT
<213> Homo sapiens

<400> 1786

```
Met Glu Ser Ala Val Arg Val Glu Ser Gly Val Leu Val Gly Val Val
  1               5                  10                  15
Cys Leu Leu Leu Ala Cys Pro Ala Thr Ala Thr Gly Pro Glu Val Ala
            20                  25                  30
Gln Pro Glu Val Asp Thr Thr Leu Gly Arg Val Arg Gly Arg Gln Val
        35                  40                  45
Gly Val Lys Gly Thr Asp Arg Leu Val Asn Val Phe Leu Gly Ile Pro
    50                  55                  60
Phe Ala Gln Pro Pro Leu Gly Pro Asp Arg Phe Ser Ala Pro His Pro
65                  70                  75                  80
Ala Gln Pro Trp Glu Gly Val Arg Asp Ala Ser Thr Ala Pro Pro Met
                85                  90                  95
Cys Leu Gln Asp Val Glu Ser Met Asn Ser Ser Arg Phe Val Leu Asn
            100                 105                 110
Gly Lys Gln Gln Ile Phe Ser Val Ser Glu Asp Cys Leu Val Leu Asn
        115                 120                 125
Val Tyr Ser Pro Ala Glu Val Pro Ala Gly Ser Gly Arg Pro
    130                 135                 140     142
```

<210> 1787
<211> 120
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(120)
<223> Xaa = any amino acid or nothing

<400> 1787
Met Ala Leu Thr Gly Tyr Ser Trp Leu Leu Leu Ser Ala Thr Phe Leu
1 5 10 15
Asn Val Gly Ala Glu Ile Ser Ile Thr Leu Glu Pro Ala Gln Pro Ser
20 25 30
Glu Gly Asp Asn Val Thr Leu Val Val His Gly Leu Ser Gly Glu Leu
35 40 45
Leu Ala Tyr Ser Trp Tyr Ala Gly Pro Thr Leu Ser Val Ser Tyr Leu
50 55 60
Val Ala Ser Tyr Ile Val Ser Thr Gly Asp Glu Thr Pro Gly Pro Ala
65 70 75 80
His Thr Xaa Arg Glu Ala Val Arg Pro Asp Gly Ser Leu Asp Ile Gln
85 90 95
Gly Ile Leu Pro Arg His Ser Ser Thr Tyr Ile Leu Gln Thr Phe Asn
100 105 110
Arg Gln Leu Gln Thr Glu Val Gly
115 120

<210> 1788
<211> 68
<212> PRT
<213> Homo sapiens

<400> 1788
Met Ser Trp Leu Ala Asn Gly Val Cys Leu Tyr Glu Tyr Leu Phe Phe
1 5 10 15
Arg Cys Gly Phe Leu Ile Leu Gln Pro Cys Ser Phe Asp Ala Ser Leu
20 25 30
Thr Asp Glu Glu Ser Arg Lys Asn Trp Glu Glu Phe Gly Asn Pro Asp
35 40 45
Gly Pro Gln Gly Val Val Asn Asp Asp Phe Lys Ile Leu Ala Ile Trp
50 55 60
Tyr Ile Leu *
65 67

<210> 1789
<211> 133
<212> PRT
<213> Homo sapiens

<400> 1789
Met Ala Val Val Ile Arg Leu Leu Gly Leu Pro Phe Ile Ala Gly Pro
1 5 10 15

```
Val Asp Ile Arg His Phe Phe Thr Gly Leu Thr Ile Pro Asp Gly Gly
                20                  25                  30
Val His Ile Ile Gly Gly Glu Ile Gly Glu Ala Phe Ile Ile Phe Ala
            35                  40                  45
Thr Asp Glu Asp Ala Arg Arg Ala Ile Ser Arg Ser Gly Gly Phe Ile
        50                  55                  60
Lys Asp Ser Ser Val Glu Leu Phe Leu Ser Ser Lys Ala Glu Met Gln
 65                  70                  75                  80
Lys Thr Ile Glu Met Lys Arg Thr Asp Arg Val Gly Arg Gly Arg Pro
                85                  90                  95
Gly Ser Gly Thr Ser Gly Val Asp Ser Leu Ser Asn Phe Ile Glu Ser
            100                 105                 110
Val Lys Glu Glu Ala Ser Asn Ser Gly Tyr Gly Ser Ser Ile Asn Gln
        115                 120                 125
Asp Ala Gly Phe His
    130             133
```

<210> 1790
<211> 82
<212> PRT
<213> Homo sapiens

<400> 1790

```
Met Ala Ala Trp Gly Phe Cys Phe Ala Val Ser Ala Leu Val Val Ala
  1               5                  10                  15
Cys Glu Phe Thr Arg Leu His Gly Cys Leu Arg Leu Ser Trp Gly Asn
            20                  25                  30
Phe Thr Ala Ala Phe Ala Met Leu Ala Thr Leu Leu Cys Ala Thr Ala
        35                  40                  45
Ala Val Leu Tyr Pro Leu Tyr Phe Ala Arg Arg Glu Cys Pro Pro Glu
    50                  55                  60
Pro Ala Gly Cys Ala Ala Arg Asp Phe Arg Leu Ala Ala Ser Val Phe
 65                  70                  75                  80
Ala Gly
     82
```

<210> 1791
<211> 50
<212> PRT
<213> Homo sapiens

<400> 1791

```
Met His Ala Ser Glu Gly Leu Pro Ala Leu Pro Leu Leu Ala Leu Val
  1               5                  10                  15
Ser His Ser His Ser Cys Pro Pro Leu Pro Leu Gln Pro His His Leu
            20                  25                  30
Pro Ala Ile Leu Phe Phe Leu Val Gly His Gln Leu Met Lys Cys Ile
        35                  40                  45
Arg  *
 49
```

<210> 1792
<211> 166
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(166)
<223> Xaa = any amino acid or nothing

<400> 1792

```
Met Leu Leu Trp Leu Leu Leu Leu Ile Leu Thr Pro Gly Arg Glu Gln
  1               5                  10                  15
Ser Gly Val Ala Pro Lys Ala Val Leu Leu Leu Asp Pro Pro Trp Ser
            20                  25                  30
Thr Ala Phe Lys Gly Glu Lys Val Ala Leu Ile Cys Ser Ser Ile Ser
        35                  40                  45
His Ser Leu Ala Gln Gly Asp Thr Tyr Trp Tyr His Asp Glu Lys Leu
    50                  55                  60
Leu Lys Ile Lys His Asp Lys Ile Gln Ile Thr Glu Pro Gly Asn Tyr
65                  70                  75                  80
Gln Cys Lys Thr Arg Gly Ser Ser Leu Ser Asp Ala Val His Val Glu
                85                  90                  95
Phe Ser Pro Asp Trp Leu Ile Leu Gln Ala Leu His Pro Val Phe Glu
            100                 105                 110
Gly Asp Asn Val Ile Leu Arg Cys Gln Gly Lys Asp Asn Lys Asn Thr
        115                 120                 125
His His Lys Val Tyr Tyr Lys Asp Gly Lys Gln Xaa Ser Asn Ser Tyr
    130                 135                 140
Asn Leu Glu Lys Asn Thr Val Asp Ser Val Ser Arg Asp Asn Ser Pro
145                 150                 155                 160
Tyr Tyr Cys Ala Gly  *
                165
```

<210> 1793
<211> 146
<212> PRT
<213> Homo sapiens

<400> 1793

```
Met Ala Thr Ala Ala Gln Gly Pro Leu Ser Leu Leu Trp Gly Trp Leu
  1               5                  10                  15
Trp Ser Glu Arg Phe Trp Leu Pro Glu Asn Val Ser Trp Ala Asp Leu
            20                  25                  30
Glu Gly Pro Ala Asp Gly Tyr Gly Tyr Pro Arg Gly Arg His Ile Leu
        35                  40                  45
Ser Val Phe Pro Leu Ala Ala Gly Ile Phe Phe Val Arg Leu Leu Phe
    50                  55                  60
Glu Arg Phe Ile Ala Lys Pro Cys Ala Leu Arg Ile Gly Ile Glu Asp
65                  70                  75                  80
Ser Gly Pro Tyr Gln Ala Gln Pro Asn Ala Ile Leu Glu Lys Val Phe
                85                  90                  95
Ile Ser Ile Thr Lys Tyr Pro Asp Lys Lys Arg Leu Glu Gly Leu Ser
            100                 105                 110
Lys Gln Leu Asp Trp Asn Val Arg Lys Ile Gln Cys Trp Phe Arg His
        115                 120                 125
```

```
Arg Arg Asn Gln Asp Lys Pro Pro Thr Leu Thr Lys Phe Cys Glu Ser
    130                 135                 140
Met  *
145
```

<210> 1794
<211> 151
<212> PRT
<213> Homo sapiens

<400> 1794

```
Met Glu Arg Arg Arg Leu Leu Gly Gly Met Ala Leu Leu Leu Leu Gln
  1               5                  10                  15
Ala Leu Pro Ser Pro Leu Ser Ala Arg Ala Glu Pro Pro Gln Asp Lys
            20                  25                  30
Glu Ala Cys Val Gly Thr Asn Asn Gln Ser Tyr Ile Cys Asp Thr Gly
        35                  40                  45
His Cys Cys Gly Gln Ser Gln Cys Cys Asn Tyr Tyr Tyr Glu Leu Trp
    50                  55                  60
Trp Phe Trp Leu Val Trp Thr Ile Ile Ile Ile Leu Ser Cys Cys Cys
65                  70                  75                  80
Val Cys His His Arg Arg Ala Lys His Arg Leu Gln Ala Gln Gln Arg
                85                  90                  95
Gln His Glu Ile Asn Leu Ile Ala Tyr Arg Glu Ala His Asn Tyr Ser
            100                 105                 110
Ala Leu Pro Phe Tyr Phe Arg Phe Leu Pro Asn Tyr Leu Leu Pro Pro
        115                 120                 125
Tyr Glu Glu Val Val Asn Arg Pro Pro Thr Pro Pro Pro Pro Tyr Ser
    130                 135                 140
Ala Phe Gln Leu Gln Gln Gln
145                 150 151
```

<210> 1795
<211> 177
<212> PRT
<213> Homo sapiens

<400> 1795

```
Met Ala Ala Leu Ala Ala Ala Ala Lys Lys Val Trp Ser Ala Arg Arg
  1               5                  10                  15
Leu Leu Val Leu Leu Phe Thr Pro Leu Ala Leu Leu Pro Val Val Phe
            20                  25                  30
Ala Leu Pro Pro Lys Glu Gly Arg Cys Leu Phe Val Ile Leu Leu Met
        35                  40                  45
Ala Val Tyr Trp Cys Thr Glu Ala Leu Pro Leu Ser Val Thr Ala Leu
    50                  55                  60
Leu Pro Ile Val Leu Phe Pro Phe Met Gly Ile Leu Pro Ser Asn Lys
65                  70                  75                  80
Val Cys Pro Gln Tyr Phe Leu Asp Thr Asn Phe Leu Phe Leu Ser Gly
                85                  90                  95
Leu Ile Met Ala Ser Ala Ile Glu Glu Trp Asn Leu His Arg Arg Ile
            100                 105                 110
Ala Leu Lys Ile Leu Met Leu Val Gly Val Gln Pro Ala Arg Leu Ile
```

```
        115                 120                 125
Leu Gly Met Met Val Thr Thr Ser Phe Leu Ser Met Trp Leu Ser Asn
    130                 135                 140
Thr Ala Ser Thr Ala Met Met Leu Pro Ile Ala Asn Ala Ile Leu Lys
145                 150                 155                 160
Ser Leu Phe Gly Gln Lys Glu Val Arg Lys Asp Pro Gln Pro Gly Glu
                165                 170                 175 176
 *
```

<210> 1796
<211> 98
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(98)
<223> Xaa = any amino acid or nothing

<400> 1796

```
Met His Pro Leu Pro Gly Tyr Trp Ser Cys Tyr Cys Leu Leu Leu Leu
  1               5                  10                  15
Phe Ser Leu Gly Val Gln Gly Ser Leu Gly Ala Pro Ser Ala Ala Pro
            20                  25                  30
Glu Gln Val His Leu Ser Tyr Pro Gly Glu Pro Gly Ser Met Thr Val
        35                  40                  45
Thr Trp Thr Thr Trp Val Pro Thr Arg Ser Glu Val Gln Phe Gly Leu
    50                  55                  60
Gln Pro Ser Gly Pro Leu Pro Leu Arg Ala Gln Gly Thr Phe Val Pro
65                  70                  75                  80
Phe Val Asp Xaa Gly Ile Leu Arg Arg Lys Leu Tyr Ile His Arg Val
                85                  90                  95

Thr Leu
     98
```

<210> 1797
<211> 96
<212> PRT
<213> Homo sapiens

<400> 1797

```
Met Phe Leu Trp Leu Phe Leu Ile Leu Ser Ala Leu Ile Ser Ser Thr
  1               5                  10                  15
Asn Ala Asp Ser Asp Ile Ser Val Glu Ile Cys Asn Val Cys Ser Cys
            20                  25                  30
Val Ser Val Glu Asn Val Leu Tyr Val Asn Cys Glu Lys Val Ser Val
        35                  40                  45
Tyr Arg Pro Asn Gln Leu Lys Pro Pro Trp Ser Asn Phe Tyr His Leu
    50                  55                  60
Asn Phe Gln Asn Asn Phe Leu Asn Ile Leu Tyr Pro Asn Thr Phe Leu
65                  70                  75                  80
Asn Phe Ser His Ala Val Ser Leu His Leu Gly Asn Asn Lys Leu Gln
                85                  90                  95  96
```

<210> 1798
<211> 91
<212> PRT
<213> Homo sapiens

<400> 1798
Met Arg Pro Ala Leu Ala Val Gly Leu Val Phe Ala Gly Cys Cys Ser
1 5 10 15
Asn Val Ile Phe Leu Glu Leu Leu Ala Arg Lys His Pro Gly Cys Gly
20 25 30
Asn Ile Val Thr Phe Ala Gln Phe Leu Phe Ile Ala Val Glu Gly Phe
35 40 45
Leu Phe Glu Ala Asp Leu Gly Arg Lys Pro Pro Ala Ile Pro Ile Arg
50 55 60
Tyr Tyr Ala Ile Met Val Thr Met Phe Phe Thr Val Ser Val Val Asn
65 70 75 80
Asn Tyr Ala Leu Asn Leu Asn Ile Ala Met Pro
85 90 91

<210> 1799
<211> 77
<212> PRT
<213> Homo sapiens

<400> 1799
Met Arg Ser Leu Val Trp Val Leu Ile Gln Gln Leu Thr Pro Leu Tyr
1 5 10 15
Lys Gly Glu Thr Trp Thr Gln Thr Cys Thr Glu Asp His Val Thr Met
20 25 30
Lys Ala Glu Ile Arg Val Met Leu Leu Glu Ala Arg Glu Asp Cys Gln
35 40 45
Leu Met Thr Lys Arg Ser Gln Glu Thr Gly Leu Gln Arg Ile Leu Pro
50 55 60
Glu Gly Ser Gln Lys Glu Pro Thr Leu Thr Thr Pro *
65 70 75 76

<210> 1800
<211> 182
<212> PRT
<213> Homo sapiens

<400> 1800
Met Ser Leu Lys Met Leu Ile Ser Arg Asn Lys Leu Ile Leu Leu Leu
1 5 10 15
Gly Ile Val Phe Phe Glu Arg Gly Lys Ser Ala Thr Leu Ser Leu Pro
20 25 30
Lys Ala Pro Ser Cys Gly Gln Ser Leu Val Lys Val Gln Pro Trp Asn

```
        35                  40                  45
Tyr Phe Asn Ile Phe Ser Arg Ile Leu Gly Gly Ser Gln Val Glu Lys
    50                  55                  60
Gly Ser Tyr Pro Trp Gln Val Ser Leu Lys Gln Arg Gln Lys His Ile
65                  70                  75                  80
Cys Gly Gly Ser Ile Val Ser Pro Gln Trp Val Ile Thr Ala Ala His
                85                  90                  95
Cys Ile Ala Asn Arg Asn Ile Val Ser Thr Leu Asn Val Thr Ala Gly
            100                 105                 110
Glu Tyr Asp Leu Ser Gln Thr Asp Pro Gly Glu Gln Thr Leu Thr Ile
        115                 120                 125
Glu Thr Val Ile Ile His Pro His Phe Ser Thr Lys Lys Pro Met Asp
    130                 135                 140
Tyr Asp Ile Ala Leu Leu Lys Met Ala Gly Ala Phe Gln Phe Gly His
145                 150                 155                 160
Phe Val Gly Pro Ile Cys Leu Pro Glu Leu Arg Glu Gln Phe Glu Ala
                165                 170                 175
Gly Phe Ile Cys Thr Thr
            180     182
```

<210> 1801
<211> 202
<212> PRT
<213> Homo sapiens

<400> 1801

```
Met Thr Glu Ala Thr Phe Asp Thr Leu Arg Leu Trp Leu Ile Ile Leu
  1               5                  10                  15
Leu Cys Ala Leu Arg Leu Ala Met Met Arg Ser His Leu Gln Ala Tyr
            20                  25                  30
Leu Asn Leu Ala Gln Lys Cys Val Asp Gln Met Lys Lys Glu Ala Gly
        35                  40                  45
Arg Ile Ser Thr Val Glu Leu Gln Lys Met Val Ala Arg Val Phe Tyr
    50                  55                  60
Tyr Leu Cys Val Ile Ala Leu Gln Tyr Val Ala Pro Leu Val Met Leu
65                  70                  75                  80
Leu His Thr Thr Leu Leu Leu Lys Thr Leu Gly Asn His Ser Trp Gly
                85                  90                  95
Ile Tyr Pro Glu Ser Ile Ser Thr Leu Pro Val Asp Asn Ser Leu Leu
            100                 105                 110
Ser Asn Ser Val Tyr Ser Glu Leu Pro Ser Ala Glu Gly Lys Met Lys
        115                 120                 125
His Asn Ala Arg Gln Gly Pro Ala Val Pro Pro Gly Met Gln Ala Tyr
    130                 135                 140
Gly Ala Ala Pro Phe Glu Asp Leu Gln Leu Asp Phe Thr Glu Met Pro
145                 150                 155                 160
Lys Cys Gly Asp Leu Ile Pro Arg Phe Gly Leu Pro Leu Arg Ile Gly
                165                 170                 175
Ser Asp Asn Gly Leu Ala Phe Val Ala Asp Leu Val Gln Lys Thr Ala
            180                 185                 190
Lys Trp Lys Gly Pro Gln Ile Val Val Leu
        195                 200     202
```

<210> 1802

<211> 172
<212> PRT
<213> Homo sapiens

<400> 1802

```
Met Asn Asn Phe Arg Ala Thr Ile Leu Phe Trp Ala Ala Ala Ala Trp
 1               5                  10                  15
Ala Lys Ser Gly Lys Pro Ser Gly Glu Met Asp Glu Val Gly Val Gln
            20                  25                  30
Lys Cys Lys Asn Ala Leu Lys Leu Pro Val Leu Glu Val Leu Pro Gly
        35                  40                  45
Gly Gly Trp Asp Asn Leu Arg Asn Val Asp Met Gly Arg Val Met Glu
    50                  55                  60
Leu Thr Tyr Ser Asn Cys Arg Thr Thr Glu Asp Gly Gln Tyr Ile Ile
65                  70                  75                  80
Pro Asp Glu Ile Phe Thr Ile Pro Gln Lys Gln Ser Asn Leu Glu Met
                85                  90                  95
Asn Ser Glu Ile Leu Glu Ser Trp Ala Asn Tyr Gln Ser Ser Thr Ser
            100                 105                 110
Tyr Ser Ile Asn Thr Glu Leu Ser Leu Phe Ser Lys Val Asn Gly Lys
        115                 120                 125
Phe Ser Thr Glu Phe Gln Arg Met Lys Thr Leu Gln Val Lys Asp Gln
    130                 135                 140
Ala Ile Thr Thr Arg Val Gln Val Arg Asn Leu Val Tyr Thr Val Lys
145                 150                 155                 160
Ile Asn Pro Thr Leu Glu Leu Ser Ser Gly Phe Arg
                165                 170     172
```

<210> 1803
<211> 158
<212> PRT
<213> Homo sapiens

<400> 1803

```
Met Ser Leu Arg Leu Gly Pro Ala Trp Arg His Leu Thr Cys Leu Gly
 1               5                  10                  15
Thr Lys His Ser Lys Ala Asn Ser Val Leu Ala Ser Gln His Ala Gly
            20                  25                  30
Phe Phe Val Ala Gln Gly Arg Trp Ala Ile His Arg Ala Phe Ser Ser
        35                  40                  45
Arg Thr Ser Pro Thr Pro Pro Arg Gly Pro Leu Leu Leu Pro Gly Arg
    50                  55                  60
His Pro Leu Leu Ser Arg Arg Arg Ala Gln Ala Ile Arg Ser Ser Thr
65                  70                  75                  80
Arg Pro Ser Leu Pro Ala His Leu Phe Lys Pro Ala Pro Ala Ile Ala
                85                  90                  95
Leu Ile Val Ser Pro Leu Arg Phe Pro Arg Arg Thr Ser Pro Cys His
            100                 105                 110
Leu Ser Gly Pro Pro Ala Pro Pro Cys Arg Thr Leu His Thr Leu Leu
        115                 120                 125
Arg Pro Val Cys Val Val Arg Arg Thr Pro Pro Val Phe Phe Thr Ser
    130                 135                 140
Phe Thr Pro Ala Arg Ala Ala Val Ala Ser His Pro Thr Pro
145                 150                 155         158
```

<210> 1804
<211> 102
<212> PRT
<213> Homo sapiens

<400> 1804

```
Met Gly Leu Gly Gln Pro Gln Ala Trp Leu Leu Gly Leu Pro Thr Ala
 1               5                  10                  15
Val Val Tyr Gly Ser Leu Ala Leu Phe Thr Thr Ile Leu His Asn Val
            20                  25                  30
Phe Leu Leu Tyr Tyr Val Asp Thr Phe Val Ser Val Tyr Lys Ile Asn
        35                  40                  45
Lys Met Ala Phe Trp Val Gly Glu Thr Val Phe Leu Leu Trp Asn Ser
    50                  55                  60
Leu Asn Asp Pro Leu Phe Gly Trp Leu Ser Asp Arg Gln Phe Leu Ser
65                  70                  75                  80
Ser Gln Pro Arg Ser Gly Ala Gly Leu Ser Ser Arg Ala Val Val Leu
                85                  90                  95
Ala Arg Val Gln Ala Leu
            100     102
```

<210> 1805
<211> 54
<212> PRT
<213> Homo sapiens

<400> 1805

```
Met Ala Asp Ser Val Leu Thr Leu Val Phe Thr Ser Cys Leu Leu Ser
 1               5                  10                  15
Glu Leu Ser Leu Val Cys Ser Asp Phe Arg Pro Thr Pro Ile Ser Tyr
            20                  25                  30
Gln Ser Arg Tyr Gly Ser Gly Asp Gly Trp Ile Arg Cys Lys Ser Glu
        35                  40                  45
Val Arg Glu Thr Gln  *
    50          53
```

<210> 1806
<211> 56
<212> PRT
<213> Homo sapiens

<400> 1806

```
Met Leu Ser Val Lys Arg Phe Arg Ala Met Val Met Phe Phe Met Ala
 1               5                  10                  15
Met Val Ala Met Met Lys Asn Lys Cys Gln Gln Thr Asn Glu Ala Lys
            20                  25                  30
Phe Cys Val His Met Tyr Leu His Phe Tyr Phe Ser Ser His Ser Ser
        35                  40                  45
Ala Val Cys Ile Ser Ser Pro Leu
    50                  55  56
```

<210> 1807
<211> 47
<212> PRT
<213> Homo sapiens

<400> 1807
Met Gln Ser Met Ile Asn Met Ile Val Ser Leu Leu Gly Leu Val Ala
1 5 10 15
Thr Val Thr Leu Ile Pro Ala Phe Arg Gly His Phe Ile Ala Ala Arg
20 25 30
Leu Gly Gly Gln Ser Leu Gly Lys Thr Ser Arg Gln His Met *
35 40 45 46

<210> 1808
<211> 119
<212> PRT
<213> Homo sapiens

<400> 1808
Met Ala Ala Ser Leu Leu Ala Val Leu Leu Leu Leu Leu Leu Glu Arg
1 5 10 15
Gly Met Phe Ser Ser Pro Ser Pro Pro Pro Ala Leu Leu Glu Lys Val
20 25 30
Phe Gln Tyr Ile Asp Leu His Gln Asp Glu Phe Val Gln Thr Leu Lys
35 40 45
Glu Trp Val Ala Ile Glu Ser Asp Ser Val Gln Pro Val Pro Arg Phe
50 55 60
Arg Gln Glu Leu Phe Arg Met Met Ala Val Ala Ala Asp Thr Leu Gln
65 70 75 80
Arg Leu Gly Ala Arg Val Ala Ser Val Asp Met Gly Pro Gln Gln Leu
85 90 95
Pro Asp Gly Gln Ser Leu Pro Ile Pro Pro Val Ile Leu Ala Glu Leu
100 105 110
Gly Ser Asp Pro Thr Lys Gly
115 119

<210> 1809
<211> 91
<212> PRT
<213> Homo sapiens

<400> 1809
Met Ser Arg Ser His Val Ala Leu Leu Gly Leu Ser Leu Leu Leu Met
1 5 10 15
Leu Leu Leu Tyr Ala Gly Leu Pro Ser Pro Pro Glu Gln Thr Ser Cys
20 25 30
Leu Trp Gly Asp Pro Asn Val Thr Val Leu Ala Val Ser Thr Pro Ala
35 40 45
Asn Ser Pro Met Phe Tyr Leu Glu Gly Leu Pro Leu His Leu Ala His

```
     50                  55                  60
Arg Val Asp Val Ile Pro Leu Ser Ser Leu Gly Pro Leu Val Ser Pro
 65                  70                  75                  80
Leu Arg Cys Gln Ala Leu Pro Pro Arg Leu Ser
                 85                  90  91
```

<210> 1810
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1810

```
Met Leu Leu Phe Gly Leu Cys Trp Gly Pro Tyr Val Ala Thr Leu Leu
  1               5                  10                  15
Leu Ser Val Leu Ala Tyr Glu Gln Arg Pro Pro Leu Gly Pro Gly Thr
             20                  25                  30
Leu Leu Ser Leu Leu Ser Leu Gly Ser Ala Lys Ala Ala Ala Val Pro
         35                  40                  45
Val Ala Met Gly Leu Gly Asp Gln Arg Tyr
     50                  55          58
```

<210> 1811
<211> 48
<212> PRT
<213> Homo sapiens

<400> 1811

```
Met Ala Ser Ala Ser Phe Ser Leu Leu Ile Cys Gly Phe Leu Ala Ser
  1               5                  10                  15
Leu Ser Leu Gln Arg Ile Glu Glu Leu Gly Leu Gly Leu Gly Leu Gly
             20                  25                  30
Phe Gly Leu Arg Glu Cys Cys Gly Trp Phe Gly Leu Leu Ser Leu Val
         35                  40                  45          48
```

<210> 1812
<211> 84
<212> PRT
<213> Homo sapiens

<400> 1812

```
Met Lys Val Leu Leu Ala Val Ala Leu Ile Ala Arg Thr Val Phe Phe
  1               5                  10                  15
Leu Leu Leu Ala Gly Pro Ser Ala Ala Asp Asp Lys Lys Lys Gly Pro
             20                  25                  30
Lys Val Thr Val Lys Val Tyr Phe Asp Leu Arg Ile Gly Asp Glu Asp
         35                  40                  45
Val Arg Arg Glu Ile Phe Gly Leu Phe Gly Lys Thr Ala Pro Lys Thr
     50                  55                  60
```

```
Glu Asp Asn Phe Val Ala Leu Ala Thr Gly Gln Lys Gly Phe Gly Tyr
 65                  70                  75                  80
Lys Asn Ser  *
         83
```

<210> 1813
<211> 46
<212> PRT
<213> Homo sapiens

<400> 1813

```
Met Ala Ala Ala Asp Asp Thr Ile Leu Gly Phe Arg Ala Ala Leu Leu
  1               5                  10                  15
Ile Leu Val Ala Ala Ala Ala Ala Leu Ser Pro Lys Val Ala Cys Arg
             20                  25                  30
Val Gly Thr Val Arg Arg Arg Glu Thr Pro Gln Pro Ser Ala
         35                  40                  45  46
```

<210> 1814
<211> 65
<212> PRT
<213> Homo sapiens

<400> 1814

```
Met Ile Ile Tyr Leu Thr Phe Pro Val Ala Met Phe Trp Val Ser Asn
  1               5                  10                  15
Gln Ala Glu Trp Phe Glu Asp Asp Val Ile Gln Arg Lys Arg Glu Leu
             20                  25                  30
Trp Pro Pro Glu Lys Leu Gln Glu Ile Glu Glu Phe Lys Glu Arg Leu
         35                  40                  45
Arg Lys Arg Arg Glu Glu Lys Leu Leu Arg Asp Ala Gln Gln Asn Ser
     50                  55                  60                  64
 *
```

<210> 1815
<211> 100
<212> PRT
<213> Homo sapiens

<400> 1815

```
Met Phe Lys Ser Lys Leu Leu Asn Phe Tyr Ile Phe Val Asn Cys Met
  1               5                  10                  15
Asn Phe Leu Met Leu Ser Ile Ala Ser Phe Asn Pro Phe Trp Ser Glu
             20                  25                  30
Ile Ile Val Cys Asn Ile Gln Phe Phe Tyr Tyr Thr Leu Ser Ser Arg
         35                  40                  45
Val His Val Gln Asn Val Gln Val Cys Tyr Thr Gly Ile His Val Pro
     50                  55                  60
Cys Trp Phe Ala Ala Pro Ile Asn Ser Ser Phe Thr Leu Gly Ile Ser
```

```
65                  70                  75                  80
Pro Asn Ala Ile Pro Phe Ile Val Pro His Pro Gln Thr Gly Pro Asn
                85                  90                  95

Val Arg Cys Ser
            100
```

<210> 1816
<211> 115
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(115)
<223> Xaa = any amino acid or nothing

<400> 1816

```
Met Phe Cys Phe Leu Val Ser Val Leu Tyr Ser Lys Ala Lys Leu Ala
 1               5                  10                  15
Ser Ala Cys Gly Gly Ile Ile Tyr Phe Leu Ser Tyr Val Pro Tyr Met
            20                  25                  30
Tyr Val Ala Ile Arg Glu Glu Val Ala His Asp Lys Ile Thr Ala Phe
        35                  40                  45
Glu Lys Cys Ile Ala Ser Leu Met Ser Thr Thr Ala Phe Gly Leu Gly
    50                  55                  60
Ser Lys Tyr Phe Ala Leu Tyr Glu Val Pro Gly Val Gly Ile Gln Trp
65                  70                  75                  80
His Thr Phe Ser Gln Ser Pro Val Glu Gly Glu Asp Leu Asn Leu Pro
                85                  90                  95
Pro Pro Pro Pro Met Met Pro Ala Pro Xaa Val Val Tyr Gly Ile Leu
            100                 105                 110
Thr Lys  *
        114
```

<210> 1817
<211> 144
<212> PRT
<213> Homo sapiens

<400> 1817

```
Met Val Leu Gly Leu Leu Val Gln Ile Trp Ala Leu Gln Glu Ala Ser
 1               5                  10                  15
Ser Leu Ser Val Gln Gln Gly Pro Asn Leu Leu Gln Val Arg Gln Gly
            20                  25                  30
Ser Gln Ala Thr Leu Val Cys Gln Val Asp Gln Ala Thr Ala Trp Glu
        35                  40                  45
Arg Leu Arg Val Lys Trp Thr Lys Asp Gly Ala Ile Leu Cys Gln Pro
    50                  55                  60
Tyr Ile Thr Asn Gly Ser Leu Ser Leu Gly Val Cys Gly Pro Gln Gly
65                  70                  75                  80
Arg Leu Ser Trp Gln Ala Pro Ser His Leu Thr Leu Gln Leu Asp Pro
                85                  90                  95
Val Ser Leu Asn His Ser Gly Ala Tyr Val Cys Trp Ala Ala Val Glu
            100                 105                 110
```

```
Ile Pro Glu Leu Glu Glu Ala Glu Gly Asn Ile Thr Arg Leu Phe Val
        115                 120                 125
Asp Pro Asp Asp Pro Thr Gln Asn Arg Asn Arg Ile Ala Ser Phe Pro
    130                 135                 140                 144
```

<210> 1818
<211> 115
<212> PRT
<213> Homo sapiens

<400> 1818

```
Met Gln Ala Asp Arg Gly Gly Val Leu Phe Leu Val Ala Leu Pro Gly
  1               5                  10                  15
Leu Trp Glu Thr Val Leu Arg His Pro Gly Ala Ser Pro Glu Pro Val
             20                  25                  30
Ser Leu His Thr Gly Leu Ala Ala Glu Pro Leu Leu Gly Trp Arg Ala
         35                  40                  45
Glu Val Ala Thr Ala Ala Gly Leu Gln Asp Arg Arg Ile Gly Arg Arg
     50                  55                  60
Ser Leu Pro Ala Thr Leu Pro Pro Pro Phe Pro Gln Ala Gly Asp Leu
 65                  70                  75                  80
Arg Glu Ser Ile Leu Leu Leu Pro Cys Arg Glu Ser Arg Ser Thr Ser
                 85                  90                  95
Trp Leu Ser Pro Tyr Trp Val Pro Glu Ile Pro Gly Thr Leu His Asp
            100                 105                 110
Arg Gly Arg
        115
```

<210> 1819
<211> 70
<212> PRT
<213> Homo sapiens

<400> 1819

```
Met Pro Trp Leu Leu Ser Ala Pro Lys Leu Val Pro Ala Val Ala Asn
  1               5                  10                  15
Val Arg Gly Leu Ser Gly Cys Met Leu Cys Ser Gln Arg Arg Tyr Ser
             20                  25                  30
Leu Gln Pro Val Pro Glu Arg Arg Ile Pro Asn Arg Tyr Leu Gly Gln
         35                  40                  45
Pro Ser Pro Phe Thr His Pro His Leu Leu Arg Pro Asp Ser Asn Ser
     50                  55                  60
Cys Trp Glu Val Gly  *
 65                  69
```

<210> 1820
<211> 635
<212> PRT
<213> Homo sapiens

<400> 1820

```
Met Leu Arg Ser Leu Leu Val Tyr Met Leu Phe Leu Leu Val Thr Leu
 1               5                  10                  15
Leu Ala Ser Tyr Gly Asp Ala Ser Cys His Gly His Ala Tyr Arg Leu
            20                  25                  30
Gln Ser Ala Ile Lys Gln Glu Leu His Ser Arg Ala Phe Leu Ala Ile
        35                  40                  45
Thr Arg Ser Glu Glu Leu Trp Pro Trp Met Ala His Val Leu Leu Pro
    50                  55                  60
Tyr Val His Gly Asn Gln Ser Ser Pro Glu Leu Gly Pro Pro Arg Leu
65                  70                  75                  80
Arg Gln Val Arg Leu Gln Glu Ala Leu Tyr Pro Asp Pro Pro Gly Pro
                85                  90                  95
Arg Val His Thr Cys Ser Ala Ala Gly Gly Phe Ser Thr Ser Asp Tyr
            100                 105                 110
Asp Val Gly Trp Glu Ser Pro His Asn Gly Ser Gly Thr Trp Ala Tyr
        115                 120                 125
Ser Ala Pro Asp Leu Leu Gly Ala Trp Ser Trp Gly Ser Cys Ala Val
    130                 135                 140
Tyr Asp Ser Gly Gly Tyr Val Gln Glu Leu Gly Leu Ser Leu Glu Glu
145                 150                 155                 160
Ser Arg Asp Arg Leu Arg Phe Leu Gln Leu His Asn Trp Leu Asp Asn
                165                 170                 175
Arg Ser Arg Ala Val Phe Leu Glu Leu Thr Arg Tyr Ser Pro Ala Val
            180                 185                 190
Gly Leu His Ala Ala Val Thr Leu Arg Leu Glu Phe Pro Ala Ala Gly
        195                 200                 205
Arg Ala Leu Ala Ala Leu Ser Val Arg Pro Phe Ala Leu Arg Arg Leu
    210                 215                 220
Ser Ala Gly Leu Ser Leu Pro Leu Leu Thr Ser Val Cys Leu Leu Leu
225                 230                 235                 240
Phe Ala Val His Phe Ala Val Ala Glu Ala Arg Thr Trp His Arg Glu
                245                 250                 255
Gly Arg Trp Arg Val Leu Arg Leu Gly Ala Trp Ala Arg Trp Leu Leu
            260                 265                 270
Val Ala Leu Thr Ala Ala Thr Ala Leu Val Arg Leu Ala Gln Leu Gly
        275                 280                 285
Ala Ala Asp Arg Gln Trp Thr Arg Phe Val Arg Gly Arg Pro Arg Arg
    290                 295                 300
Phe Thr Ser Phe Asp Gln Val Ala His Val Ser Ser Ala Ala Arg Gly
305                 310                 315                 320
Leu Ala Ala Ser Leu Leu Phe Leu Leu Leu Val Lys Ala Ala Gln His
                325                 330                 335
Val Arg Phe Val Arg Gln Trp Ser Val Phe Gly Lys Thr Leu Cys Arg
            340                 345                 350
Ala Leu Pro Glu Leu Leu Gly Val Thr Leu Gly Leu Val Val Leu Gly
        355                 360                 365
Val Ala Tyr Ala Gln Leu Ala Ile Leu Leu Val Ser Ser Cys Val Asp
    370                 375                 380
Ser Leu Trp Ser Val Ala Gln Ala Leu Leu Val Leu Cys Pro Gly Thr
385                 390                 395                 400
Gly Leu Ser Thr Leu Cys Pro Ala Glu Ser Trp His Leu Ser Pro Leu
                405                 410                 415
Leu Cys Val Gly Leu Trp Ala Leu Arg Leu Trp Gly Ala Leu Arg Leu
            420                 425                 430
Gly Ala Val Ile Leu Arg Trp Arg Tyr His Ala Leu Arg Gly Glu Leu
        435                 440                 445
```

```
Tyr Arg Pro Ala Trp Glu Pro Gln Asp Tyr Glu Met Val Glu Leu Phe
    450                 455                 460
Leu Arg Arg Leu Arg Leu Trp Met Gly Leu Ser Lys Val Lys Glu Phe
465                 470                 475                 480
Arg His Lys Val Arg Phe Glu Gly Met Glu Pro Leu Pro Ser Arg Ser
                485                 490                 495
Ser Arg Gly Ser Lys Val Ser Pro Asp Val Pro Pro Pro Ser Ala Gly
            500                 505                 510
Ser Asp Ala Ser His Pro Ser Thr Ser Ser Ser Gln Leu Asp Gly Leu
        515                 520                 525
Ser Val Ser Leu Gly Arg Leu Gly Thr Arg Cys Glu Pro Glu Pro Ser
    530                 535                 540
Arg Leu Gln Ala Val Phe Glu Ala Leu Leu Thr Gln Phe Asp Arg Leu
545                 550                 555                 560
Asn Gln Ala Thr Glu Asp Val Tyr Gln Leu Glu Gln Gln Leu His Ser
                565                 570                 575
Leu Gln Gly Arg Arg Ser Ser Arg Ala Pro Ala Gly Ser Ser Arg Gly
            580                 585                 590
Pro Ser Pro Gly Leu Arg Pro Ala Leu Pro Ser Arg Leu Ala Arg Ala
        595                 600                 605
Ser Arg Gly Val Asp Leu Ala Thr Gly Pro Ser Arg Thr Pro Leu Arg
    610                 615                 620
Ala Lys Asn Lys Val His Pro Ser Ser Thr  *
625                 630                 634
```

<210> 1821
<211> 84
<212> PRT
<213> Homo sapiens

<400> 1821

```
Met Gly Ser Thr Trp Gly Ser Pro Gly Trp Val Arg Leu Ala Leu Cys
  1               5                  10                  15
Leu Thr Gly Leu Met Leu Ser Leu Tyr Thr Leu His Val Lys Ala Ala
            20                  25                  30
Arg Ala Arg Asn Arg Asp Tyr Arg Ala Leu Cys Asp Val Gly Thr Val
        35                  40                  45
Ile Ser Cys Thr Arg Val Phe Tyr Ser Lys Leu Pro Ala Asp Thr Leu
    50                  55                  60
Asp Leu Cys Pro Asp Ala Ala Glu Leu Pro Gly Val Ser Arg Trp Phe
65                  70                  75                  80
Cys Leu Pro Gly
                84
```

<210> 1822
<211> 108
<212> PRT
<213> Homo sapiens

<400> 1822

```
Met Ala Leu Asp Phe Val Asn Val Leu Leu Cys Gln Leu Ala Glu Val
  1               5                  10                  15
Thr Leu Gly Val Leu Arg Glu Glu Gly Ala Ser Leu Leu Val Ala Leu
```

```
            20                  25                  30
Gly Ser Ala Leu Phe Pro Ser Ala Ala Ala Val Gly Lys Gln Gly Ser
        35                  40                  45
Met Gly Val Thr Ser His Met Gln Cys Pro Val Cys Gln His Pro Arg
    50                  55                  60
Asp Val Leu Leu Ala Ser Pro Val Ser His Ser His Ala Cys Gln Pro
65                  70                  75                  80
Gln Pro Ala Gly Cys Ser Asn Cys His Leu Gly His Leu Thr Arg Ser
                85                  90                  95
Pro Pro Phe Gln Gly Leu Leu Pro Leu Leu Gln  *
            100                 105     107
```

<210> 1823
<211> 74
<212> PRT
<213> Homo sapiens

<400> 1823

```
Met Gly Val Val Leu Tyr Val Met Leu Cys Ala Ser Leu Pro Phe Asp
 1               5                  10                  15
Asp Thr Asp Ile Pro Lys Met Leu Trp Gln Gln Gln Lys Gly Val Ser
            20                  25                  30
Phe Pro Thr His Leu Ser Ile Ser Ala Asp Cys Gln Asp Leu Leu Lys
        35                  40                  45
Arg Leu Leu Glu Pro Asp Met Ile Leu Arg Pro Ser Ile Glu Glu Val
    50                  55                  60
Ser Trp His Pro Trp Leu Ala Ser Thr  *
65                  70          73
```

<210> 1824
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1824

```
Met Ser Leu Ser Cys Thr Gly Phe Ala Leu Glu Lys Arg Cys Ala Gly
 1               5                  10                  15
Trp Val Trp Trp Leu Thr Pro Val Ile Pro Ala Leu Leu Gly Gly Gln
            20                  25                  30
Gly Arg Gln Ile Met Ile Met Val Arg Ser Leu Arg Pro Ala Gly Pro
        35                  40                  45
Thr Trp Gly Asn Leu Ser Thr Thr Lys Thr
    50                  55          58
```

<210> 1825
<211> 225
<212> PRT
<213> Homo sapiens

<400> 1825

```
Met Ala Cys Lys Gly Leu Leu Gln Gln Val Gln Gly Pro Arg Leu Pro
 1               5                  10                  15
Trp Thr Arg Leu Leu Leu Leu Leu Leu Val Phe Ala Val Gly Phe Leu
            20                  25                  30
Cys His Asp Leu Arg Ser His Ser Ser Phe Gln Ala Ser Leu Thr Gly
        35                  40                  45
Arg Leu Leu Arg Ser Ser Gly Phe Leu Pro Ala Ser Gln Gln Ala Cys
    50                  55                  60
Ala Lys Leu Tyr Ser Tyr Ser Leu Gln Gly Tyr Ser Trp Leu Gly Glu
65                  70                  75                  80
Thr Leu Pro Leu Trp Gly Ser His Leu Leu Thr Val Val Arg Pro Ser
                85                  90                  95
Leu Gln Leu Ala Trp Ala His Thr Asn Ala Thr Val Ser Phe Leu Ser
            100                 105                 110
Ala His Cys Ala Ser His Leu Ala Trp Phe Gly Asp Ser Leu Thr Ser
        115                 120                 125
Leu Ser Gln Arg Leu Gln Ile Gln Leu Pro Asp Ser Val Asn Gln Leu
    130                 135                 140
Leu Arg Tyr Leu Arg Glu Leu Pro Leu Leu Phe His Gln Asn Val Leu
145                 150                 155                 160
Leu Pro Leu Trp His Leu Leu Leu Glu Ala Leu Ala Trp Ala Gln Glu
                165                 170                 175
His Cys His Glu Ala Cys Arg Gly Glu Val Thr Trp Asp Cys Met Lys
            180                 185                 190
Thr Gln Leu Ser Glu Ala Val His Trp Thr Trp Leu Cys Leu Gln Asp
        195                 200                 205
Ile Thr Val Ala Phe Leu Asp Trp Ala Leu Ala Leu Ile Ser Gln Gln
    210                 215                 220                 224
 *
```

<210> 1826
<211> 119
<212> PRT
<213> Homo sapiens

<400> 1826

```
Met Tyr Arg Glu Val Cys Ser Ile Arg Phe Leu Phe Thr Ala Val Ser
 1               5                  10                  15
Leu Leu Ser Leu Phe Leu Ser Ala Phe Trp Leu Gly Leu Leu Tyr Leu
            20                  25                  30
Val Ser Pro Leu Glu Asn Glu Pro Lys Glu Met Leu Thr Leu Ser Glu
        35                  40                  45
Tyr His Glu Arg Ala Arg Ser Gln Gly Gln Gln Leu Leu Gln Phe Gln
    50                  55                  60
Ala Glu Leu Asp Lys Leu His Lys Glu Ala Ser Leu Val Cys Gly Cys
65                  70                  75                  80
Pro Ser Leu Arg Glu Val Pro Ser Ser Ala Val Ser Arg Leu Glu Pro
                85                  90                  95
Pro Ser Ile Ala Gln Pro Leu Leu Ser Arg Leu Gln Leu Tyr Leu Ser
            100                 105                 110
Asp Pro Ser Ser Tyr Leu Val
        115                 119
```

<210> 1827
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1827
Met Lys Leu Met Arg Pro Leu Met Leu Leu Tyr Ile Ser Gln Leu Tyr
1 5 10 15
Met Leu Met Lys Arg Asn Ser Pro His Ile Gly Asp Cys Leu Ser Leu
20 25 30
Leu Phe Leu Gln Glu Lys Lys Gln Lys Glu Val Tyr Thr Leu Leu Ala
35 40 45
Met Met Gln Val Ser Phe Ile Leu Val *
50 55 57

<210> 1828
<211> 102
<212> PRT
<213> Homo sapiens

<400> 1828
Met Gln Pro Ser Gly Leu Glu Gly Pro Gly Thr Phe Gly Arg Trp Pro
1 5 10 15
Leu Leu Ser Leu Leu Leu Leu Leu Leu Leu Leu Gln Pro Val Thr Cys
20 25 30
Ala Tyr Thr Thr Pro Gly Pro Pro Arg Ala Leu Thr Thr Leu Gly Ala
35 40 45
Pro Arg Ala His Thr Met Pro Gly Thr Tyr Ala Pro Ser Thr Thr Leu
50 55 60
Ser Ser Pro Ser Thr Gln Gly Leu Gln Glu Gln Ala Arg Ala Leu Met
65 70 75 80
Arg Asp Phe Pro Leu Val Asp Gly His Asn Asp Leu Pro Leu Val Leu
85 90 95
Arg Gln Val Tyr His Asn
100 102

<210> 1829
<211> 88
<212> PRT
<213> Homo sapiens

<400> 1829
Met Arg Lys Ile Tyr Thr Thr Val Leu Phe Ala Asn Ile Tyr Leu Ala
1 5 10 15
Pro Leu Ser Leu Ile Val Ile Met Tyr Gly Arg Ile Gly Ile Ser Leu
20 25 30
Phe Arg Ala Ala Val Pro His Thr Gly Arg Lys Asn Gln Glu Gln Trp
35 40 45
His Val Val Ser Arg Lys Lys Gln Lys Ile Ile Lys Met Leu Leu Ile
50 55 60
Val Ala Leu Leu Phe Ile Leu Ser Trp Leu Pro Leu Trp Thr Leu Met
65 70 75 80

Met Leu Ser Asp Tyr Ala Lys Pro
85 88

<210> 1830
<211> 120
<212> PRT
<213> Homo sapiens

<400> 1830
Met Lys Trp Arg Arg Lys Ser Ala Tyr Trp Lys Ala Leu Lys Val Phe
1 5 10 15
Lys Leu Pro Val Glu Phe Leu Leu Leu Leu Thr Val Pro Val Val Asp
20 25 30
Pro Asp Lys Asp Asp Gln Asn Trp Lys Arg Pro Leu Asn Cys Leu His
35 40 45
Leu Val Ile Ser Pro Leu Val Val Val Leu Thr Leu Gln Ser Gly Thr
50 55 60
Tyr Gly Val Tyr Glu Ile Gly Gly Leu Val Pro Val Trp Val Val Val
65 70 75 80
Val Ile Ala Gly Thr Ala Leu Ala Ser Val Thr Phe Phe Ala Thr Ser
85 90 95
Asp Ser Gln Pro Pro Arg Leu His Trp Leu Phe Ala Phe Leu Gly Phe
100 105 110
Leu Thr Ser Ala Leu Trp Ile Asn
115 120

<210> 1831
<211> 64
<212> PRT
<213> Homo sapiens

<400> 1831
Met Phe Trp Arg Gly Trp Gly Ala Pro Leu Trp Ala Trp Pro Thr Leu
1 5 10 15
Leu Thr Pro Ile Lys Cys Ser Ser Leu Tyr Asp Ser Phe Phe Ser Pro
20 25 30
Thr Asp Ala Leu Gly Leu Glu Ser Leu Leu Gly Thr Ala Ser Leu Trp
35 40 45
Pro Leu Leu Leu Ser Leu Thr Glu Leu Pro Ala Leu Leu Gln Met *
50 55 60 63

<210> 1832
<211> 89
<212> PRT
<213> Homo sapiens

<400> 1832
Met Gly Ile Lys His Phe Ser Gly Leu Phe Val Leu Leu Cys Ile Gly
1 5 10 15
Phe Gly Leu Ser Ile Leu Thr Thr Ile Gly Glu His Ile Val Tyr Arg

```
            20                  25                  30
Leu Leu Leu Pro Arg Ile Lys Asn Lys Ser Lys Leu Gln Tyr Trp Leu
        35                  40                  45
His Thr Ser Gln Arg Leu His Arg Ala Ile Asn Thr Ser Phe Ile Glu
    50                  55                  60
Glu Lys Gln Gln His Phe Lys Thr Lys Arg Val Glu Lys Arg Ser Asn
65                  70                  75                  80
Val Gly Pro Arg Gln Leu Thr Val Trp
                85                  89
```

<210> 1833
<211> 60
<212> PRT
<213> Homo sapiens

<400> 1833

```
Met Phe Leu Val Ser Ile Ile Cys Val Thr Leu Phe Phe Pro Ile Val
 1               5                  10                  15
Ala Leu Phe Asp Leu Tyr Ala Thr Leu Ala His Cys Val Tyr Ala Phe
            20                  25                  30
Ser Thr Asp Ser Leu Leu Pro Ala Val Met Leu Thr Ala Leu Pro Arg
        35                  40                  45
Ser Leu Phe Phe Ser Ser Ser Leu Ile Leu Ser Ser
    50                  55                  60
```

<210> 1834
<211> 62
<212> PRT
<213> Homo sapiens

<400> 1834

```
Met Val Pro Ala Ala Gly Ala Leu Leu Trp Val Leu Leu Leu Asn Leu
 1               5                  10                  15
Gly Pro Arg Ala Ala Gly Ala Gln Gly Leu Thr Gln Thr Pro Thr Glu
            20                  25                  30
Met Gln Arg Val Met Leu Arg Phe Gly Cys Ser Val Ile Cys Cys Tyr
        35                  40                  45
Cys Ile Ser Val Arg Thr Gly Arg Ser Arg Glu Thr Gly  *
    50                  55                  60  61
```

<210> 1835
<211> 71
<212> PRT
<213> Homo sapiens

<400> 1835

```
Met Leu Leu Lys Ile Leu Lys Gly Cys Val Val Phe His His Leu Pro
 1               5                  10                  15
Cys Ser Thr Gln Val Tyr Lys Pro Ser Leu Gly Met Trp Gly Phe Leu
            20                  25                  30
```

```
Ser Pro Leu Trp Glu Val Val Phe Cys His Thr Pro Cys Phe Arg Ala
          35                  40                  45
Gln Pro Gln Leu Asp Arg Ala Gly Ser Ser Phe Leu Ile Tyr Pro Ser
      50                  55                  60
Pro His Ser Thr Ser Asn  *
 65                  70
```

<210> 1836
<211> 110
<212> PRT
<213> Homo sapiens

<400> 1836

```
Met Leu Met Tyr Met Phe Tyr Val Leu Pro Phe Cys Gly Leu Ala Ala
  1               5                  10                  15
Tyr Ala Leu Thr Phe Pro Gly Cys Ser Trp Leu Pro Asp Trp Ala Leu
            20                  25                  30
Val Phe Ala Gly Gly Ile Gly Gln Ala Gln Phe Ser His Met Gly Ala
        35                  40                  45
Ser Met His Leu Arg Thr Pro Phe Thr Tyr Arg Val Pro Glu Asp Thr
    50                  55                  60
Trp Gly Cys Phe Phe Val Cys Asn Leu Leu Tyr Ala Leu Gly Pro His
 65                  70                  75                  80
Leu Leu Ala Tyr Arg Cys Leu Gln Trp Pro Ala Phe Phe His Gln Pro
                85                  90                  95
Pro Pro Ser Asp Pro Leu Ala Leu His Lys Lys Gln His  *
            100                 105                 109
```

<210> 1837
<211> 91
<212> PRT
<213> Homo sapiens

<400> 1837

```
Met Leu Leu Leu Leu Thr Trp Pro Tyr Ile Leu Leu Gly Phe Leu Phe
  1               5                  10                  15
Cys Ala Phe Val Val Val Asn Gly Gly Ile Val Ile Gly Asp Arg Ser
            20                  25                  30
Ser His Glu Ala Cys Leu His Phe Pro Gln Leu Phe Tyr Phe Phe Ser
        35                  40                  45
Phe Thr Leu Phe Phe Ser Phe Pro His Leu Leu Ser Pro Ser Lys Ile
    50                  55                  60
Lys Thr Phe Leu Ser Leu Val Trp Lys Arg Arg Ile Leu Phe Phe Val
 65                  70                  75                  80
Val Thr Leu Val Ser Val Phe Leu Val Trp Asn
                85                  90  91
```

<210> 1838
<211> 201
<212> PRT
<213> Homo sapiens

<400> 1838

```
Met Pro Ile Gly Leu Arg Gly Leu Met Ile Ala Val Met Leu Ala Ala
 1               5                  10                  15
Leu Met Ser Ser Leu Thr Ser Ile Phe Asn Ser Ser Ser Thr Leu Phe
            20                  25                  30
Thr Met Asp Ile Trp Arg Arg Leu Arg Pro Arg Ser Gly Glu Arg Glu
        35                  40                  45
Leu Leu Leu Val Gly Arg Leu Val Ile Val Ala Leu Ile Gly Val Ser
    50                  55                  60
Val Ala Trp Ile Pro Val Leu Gln Asp Ser Asn Ser Gly Gln Leu Phe
65                  70                  75                  80
Ile Tyr Met Gln Ser Val Thr Ser Ser Leu Ala Pro Pro Val Thr Ala
                85                  90                  95
Val Phe Val Leu Gly Val Phe Trp Arg Arg Ala Asn Glu Gln Gly Ala
            100                 105                 110
Phe Trp Gly Leu Ile Ala Gly Leu Val Val Gly Ala Thr Arg Leu Val
        115                 120                 125
Leu Glu Phe Leu Asn Pro Ala Pro Pro Cys Gly Glu Pro Asp Thr Arg
    130                 135                 140
Pro Ala Val Leu Gly Ser Ile His Tyr Leu His Phe Ala Val Ala Leu
145                 150                 155                 160
Phe Ala Leu Ser Gly Ala Val Val Val Ala Gly Ser Leu Leu Thr Pro
                165                 170                 175
Pro Pro Gln Ser Val Gln Ile Glu Asn Leu Thr Trp Trp Thr Leu Ala
            180                 185                 190
Gln Asp Val Pro Leu Gly Thr Lys Ala
        195                 200 201
```

<210> 1839
<211> 130
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(130)
<223> Xaa = any amino acid or nothing

<400> 1839

```
Met Leu Phe Phe Leu Gln Ser Leu Phe Met Leu Ala Thr Val Val Leu
 1               5                  10                  15
Tyr Phe Ser His Leu Lys Glu Tyr Val Ala Ser Met Val Phe Ser Leu
            20                  25                  30
Ala Leu Gly Trp Thr Asn Met Leu Tyr Tyr Thr Arg Gly Phe Gln Gln
        35                  40                  45
Met Gly Ile Tyr Ala Val Met Ile Glu Lys Met Ile Leu Arg Asp Leu
    50                  55                  60
Cys Arg Phe Met Phe Val Tyr Ile Val Phe Leu Phe Gly Phe Ser Thr
65                  70                  75                  80
Ala Val Val Thr Leu Ile Glu Asp Gly Lys Asn Asp Ser Leu Pro Ser
                85                  90                  95
Glu Ser Thr Ser His Arg Trp Arg Gly Phe Ser Xaa Thr Pro Leu Xaa
            100                 105                 110
Leu Leu His Lys Leu Tyr Ser Thr Cys Leu Glu Leu Ser Asn Ser Thr
        115                 120                 125
```

Xaa Asp
130

<210> 1840
<211> 47
<212> PRT
<213> Homo sapiens

<400> 1840
Met Asn Arg Val Met Arg Gly Leu Ala Ile Thr Thr Thr Cys Leu Leu
1 5 10 15
Ser Met Leu Gln Ala Ile Thr Ile Ser Pro Ser Ile Leu Trp Asn His
20 25 30
Ala Ala Val Gln Tyr Val His Gly His Ser Leu Val Gln Ala *
35 40 45 46

<210> 1841
<211> 82
<212> PRT
<213> Homo sapiens

<400> 1841
Met Thr Ala Arg Leu Met Arg Ser Leu Leu Ala Ala Gln Leu Thr Phe
1 5 10 15
Val Tyr Arg Val Ala His Leu Met Asn Val Ala Gln Arg Ile Arg Gly
20 25 30
Asn Arg Pro Ile Lys Asn Glu Arg Leu Leu Ala Leu Leu Gly Asp Asn
35 40 45
Glu Lys Met Asn Leu Ser Asp Val Glu Leu Ile Pro Leu Pro Leu Glu
50 55 60
Pro Gln Val Lys Ile Arg Gly Ile Ile Pro Glu Thr Ala Thr Leu Phe
65 70 75 80
Lys Ser
82

<210> 1842
<211> 77
<212> PRT
<213> Homo sapiens

<400> 1842
Met Val Ala Asn Met Phe Tyr Ile Val Val Ile Met Ala Leu Val Leu
1 5 10 15
Leu Ser Phe Gly Val Pro Arg Lys Ala Ile Leu Tyr Pro His Glu Ala
20 25 30
Pro Ser Trp Thr Leu Ala Lys Asp Ile Val Phe His Pro Tyr Trp Met
35 40 45
Ile Phe Gly Glu Val Tyr Ala Tyr Glu Ile Asp Val Cys Ala Asn Asp
50 55 60
Ser Val Ile Pro Gln Ile Cys Gly Pro Ser Thr Arg Pro

65 70 75 77

<210> 1843
<211> 109
<212> PRT
<213> Homo sapiens

<400> 1843
Met Met His Asn Ile Ile Val Lys Glu Leu Ile Val Thr Phe Phe Leu
1 5 10 15
Gly Ile Thr Val Val Gln Met Leu Ile Ser Val Thr Gly Leu Lys Gly
20 25 30
Val Glu Ala Gln Asn Gly Ser Glu Ser Glu Val Phe Val Gly Lys Tyr
35 40 45
Glu Thr Leu Val Phe Tyr Trp Pro Ser Leu Leu Cys Leu Ala Phe Leu
50 55 60
Leu Gly Arg Phe Leu His Met Phe Val Lys Ala Leu Arg Val His Leu
65 70 75 80
Gly Trp Glu Leu Gln Val Glu Glu Lys Ser Val Leu Glu Val His Gln
85 90 95
Gly Glu His Val Lys Gln Leu Leu Arg Ile Pro Arg Pro
100 105 109

<210> 1844
<211> 85
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(85)
<223> Xaa = any amino acid or nothing

<400> 1844
Met Thr Ile His Leu Cys Ser Asn Leu Met Cys His Phe Leu Gln Arg
1 5 10 15
Met Gly Thr Ile Leu Leu Cys Pro Asn Met Gln Pro His Gln Asn Leu
20 25 30
Thr Thr Val Ile Cys Ser Lys Gly Asn Leu Leu Arg Ala Val Lys Gly
35 40 45
Ser Lys Ser Leu Arg Asn Ala Arg Lys Tyr Pro Phe His His Pro Pro
50 55 60
Xaa Xaa Glu Pro Pro Asn Gly Gly Gln Thr Arg Xaa Gly Gly Ala Arg
65 70 75 80
Phe Lys Gln Pro Thr
85

<210> 1845
<211> 110
<212> PRT
<213> Homo sapiens

<400> 1845

```
Met Tyr Ala Leu Tyr Ile Thr Val His Gly Tyr Phe Leu Ile Thr Phe
 1               5                  10                  15
Leu Phe Gly Met Val Val Leu Ala Leu Val Val Trp Lys Ile Phe Thr
            20                  25                  30
Leu Ser Arg Ala Thr Ala Val Lys Glu Arg Gly Lys Asn Arg Lys Lys
        35                  40                  45
Val Leu Thr Leu Leu Gly Leu Ser Ser Leu Val Gly Val Thr Trp Gly
    50                  55                  60
Leu Ala Ile Phe Thr Pro Leu Gly Leu Ser Thr Val Tyr Ile Phe Ala
65                  70                  75                  80
Leu Phe Asn Ser Leu Gln Gly Val Phe Ile Cys Cys Trp Phe Thr Ile
                85                  90                  95
Leu Tyr Leu Pro Ser Gln Ser Thr Thr Val Ser Ser Ser Thr
            100                 105                 110
```

<210> 1846
<211> 94
<212> PRT
<213> Homo sapiens

<400> 1846

```
Met Thr Glu Pro Pro Gly Ala Ser Ser His Leu Arg Gln Ala Leu Arg
 1               5                  10                  15
Cys Cys Gln Trp Leu Ala Gly Ile Pro Ser Gln Trp Val Leu Phe Trp
            20                  25                  30
Glu Val Leu Trp Lys Trp Val Leu Gln Thr Asp Ala Ala Trp Ser Pro
        35                  40                  45
Gly Phe Ser Pro Leu Pro Arg Gly Met Tyr Gln His Pro Ala Leu Pro
    50                  55                  60
Glu Met Pro Ser Pro Phe Leu Gly Ile Leu Arg Leu Glu Tyr Val Lys
65                  70                  75                  80
Leu Leu Gly Leu Cys Met Cys Leu Ser Thr Gly Ser Ser  *
                85                  90          93
```

<210> 1847
<211> 1300
<212> PRT
<213> Homo sapiens

<400> 1847

```
Met Ala Trp Lys Thr Leu Pro Ile Tyr Leu Leu Leu Leu Leu Ser Val
 1               5                  10                  15
Phe Val Ile Gln Gln Val Ser Ser Gln Asp Leu Ser Ser Cys Ala Gly
            20                  25                  30
Arg Cys Gly Glu Gly Tyr Ser Arg Asp Ala Thr Cys Asn Cys Asp Tyr
        35                  40                  45
Asn Cys Gln His Tyr Met Glu Cys Cys Pro Asp Phe Lys Arg Val Cys
    50                  55                  60
Thr Ala Glu Leu Ser Cys Lys Gly Arg Cys Phe Glu Ser Phe Glu Arg
65                  70                  75                  80
Gly Arg Glu Cys Asp Cys Asp Ala Gln Cys Lys Lys Tyr Asp Lys Cys
```

```
                    85                  90                  95
Cys Pro Asp Tyr Glu Ser Phe Cys Ala Glu Val His Asn Pro Thr Ser
                100                 105                 110
Pro Pro Ser Ser Lys Lys Ala Pro Pro Pro Ser Gly Ala Ser Gln Thr
            115                 120                 125
Ile Lys Ser Thr Thr Lys Arg Ser Pro Lys Pro Pro Asn Lys Lys Lys
    130                 135                 140
Thr Lys Lys Val Ile Glu Ser Glu Glu Ile Thr Glu Glu His Ser Val
145                 150                 155                 160
Ser Glu Asn Gln Glu Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser
                165                 170                 175
Ser Thr Ile Trp Lys Ile Lys Ser Ser Lys Asn Ser Ala Ala Asn Arg
            180                 185                 190
Glu Leu Gln Lys Lys Leu Lys Val Lys Asp Asn Lys Lys Asn Arg Thr
        195                 200                 205
Lys Lys Lys Pro Thr Pro Lys Pro Pro Val Val Asp Glu Ala Gly Ser
    210                 215                 220
Gly Leu Asp Asn Gly Asp Phe Lys Val Thr Thr Pro Asp Thr Ser Thr
225                 230                 235                 240
Thr Gln His Asn Lys Val Ser Thr Ser Pro Lys Ile Thr Thr Ala Lys
                245                 250                 255
Pro Ile Asn Pro Arg Pro Ser Leu Pro Pro Asn Ser Asp Thr Ser Lys
            260                 265                 270
Glu Thr Ser Leu Thr Val Asn Lys Glu Thr Thr Val Glu Thr Lys Glu
        275                 280                 285
Thr Thr Thr Thr Asn Lys Gln Thr Ser Thr Asp Gly Lys Glu Lys Thr
    290                 295                 300
Thr Ser Ala Lys Glu Thr Gln Ser Ile Glu Lys Thr Ser Ala Lys Asp
305                 310                 315                 320
Leu Ala Pro Thr Ser Lys Val Leu Ala Lys Pro Thr Pro Lys Ala Glu
                325                 330                 335
Thr Thr Thr Lys Gly Pro Ala Leu Thr Thr Pro Lys Glu Pro Thr Pro
            340                 345                 350
Thr Thr Pro Lys Glu Pro Ala Ser Thr Thr Pro Lys Glu Pro Thr Pro
        355                 360                 365
Thr Thr Ile Lys Ser Ala Pro Thr Thr Pro Lys Glu Pro Ala Pro Thr
    370                 375                 380
Thr Thr Lys Ser Ala Pro Thr Thr Pro Lys Glu Pro Ala Pro Thr Thr
385                 390                 395                 400
Thr Lys Glu Pro Ala Pro Thr Thr Pro Lys Glu Pro Ala Pro Thr Thr
                405                 410                 415
Thr Lys Glu Pro Ala Pro Thr Thr Thr Lys Ser Ala Pro Thr Thr Pro
            420                 425                 430
Lys Glu Pro Ala Pro Thr Thr Pro Lys Lys Pro Ala Pro Thr Thr Pro
        435                 440                 445
Lys Glu Pro Ala Pro Thr Thr Pro Lys Glu Pro Thr Pro Thr Thr Pro
    450                 455                 460
Lys Glu Pro Ala Pro Thr Thr Lys Glu Pro Ala Pro Thr Thr Pro Lys
465                 470                 475                 480
Glu Pro Ala Pro Thr Ala Pro Lys Lys Pro Ala Pro Thr Thr Pro Lys
                485                 490                 495
Glu Pro Ala Pro Thr Thr Pro Lys Glu Pro Ala Pro Thr Thr Thr Lys
            500                 505                 510
Glu Pro Ser Pro Thr Thr Pro Lys Glu Pro Ala Pro Thr Thr Thr Lys
        515                 520                 525
Ser Ala Pro Thr Thr Thr Lys Glu Pro Ala Pro Thr Thr Thr Lys Ser
    530                 535                 540
Ala Pro Thr Thr Pro Lys Glu Pro Ser Pro Thr Thr Thr Lys Glu Pro
545                 550                 555                 560
```

```
Ala Pro Thr Thr Pro Lys Glu Pro Ala Pro Thr Thr Pro Lys Lys Pro
                565                 570                 575
Ala Pro Thr Thr Pro Lys Glu Pro Ala Pro Thr Thr Pro Lys Glu Pro
            580                 585                 590
Ala Pro Thr Thr Thr Lys Lys Pro Ala Pro Thr Ala Pro Lys Glu Pro
        595                 600                 605
Ala Pro Thr Thr Pro Lys Glu Thr Ala Pro Thr Thr Pro Lys Lys Leu
    610                 615                 620
Thr Pro Thr Thr Pro Glu Lys Leu Ala Pro Thr Thr Pro Glu Lys Pro
625                 630                 635                 640
Ala Pro Thr Thr Pro Glu Glu Leu Ala Pro Thr Thr Pro Glu Glu Pro
                645                 650                 655
Thr Pro Thr Thr Pro Glu Glu Pro Ala Pro Thr Thr Pro Lys Ala Ala
            660                 665                 670
Ala Pro Asn Thr Pro Lys Glu Pro Ala Pro Thr Thr Pro Lys Glu Pro
        675                 680                 685
Ala Pro Thr Thr Pro Lys Glu Pro Ala Pro Thr Thr Pro Lys Glu Thr
    690                 695                 700
Ala Pro Thr Thr Pro Lys Gly Thr Ala Pro Thr Thr Leu Lys Glu Pro
705                 710                 715                 720
Ala Pro Thr Thr Pro Lys Lys Pro Ala Pro Lys Glu Leu Ala Pro Thr
                725                 730                 735
Thr Thr Lys Glu Pro Thr Ser Thr Thr Ser Asp Lys Pro Ala Pro Thr
            740                 745                 750
Thr Pro Lys Gly Thr Ala Pro Thr Thr Pro Lys Glu Pro Ala Pro Thr
        755                 760                 765
Thr Pro Lys Glu Pro Ala Pro Thr Thr Pro Lys Gly Thr Ala Pro Thr
    770                 775                 780
Thr Leu Lys Glu Pro Ala Pro Thr Thr Pro Lys Lys Pro Ala Pro Lys
785                 790                 795                 800
Glu Leu Ala Pro Thr Thr Thr Lys Gly Pro Thr Ser Thr Thr Ser Asp
                805                 810                 815
Lys Pro Ala Pro Thr Thr Pro Lys Glu Thr Ala Pro Thr Thr Pro Lys
            820                 825                 830
Glu Pro Ala Pro Thr Thr Pro Lys Lys Pro Ala Pro Thr Thr Pro Glu
        835                 840                 845
Thr Pro Pro Pro Thr Thr Ser Glu Val Ser Thr Pro Thr Thr Thr Lys
    850                 855                 860
Glu Pro Thr Thr Ile His Lys Ser Pro Asp Glu Ser Thr Pro Glu Leu
865                 870                 875                 880
Ser Ala Glu Pro Thr Pro Lys Ala Leu Glu Asn Ser Pro Lys Glu Pro
                885                 890                 895
Gly Val Pro Thr Thr Lys Thr Pro Ala Ala Thr Lys Pro Glu Met Thr
            900                 905                 910
Thr Thr Ala Lys Asp Lys Thr Thr Glu Arg Asp Leu Arg Thr Thr Pro
        915                 920                 925
Glu Thr Thr Thr Ala Ala Pro Lys Met Thr Lys Glu Thr Ala Thr Thr
    930                 935                 940
Thr Glu Lys Thr Thr Glu Ser Lys Ile Thr Ala Thr Thr Thr Gln Val
945                 950                 955                 960
Thr Ser Thr Thr Thr Gln Asp Thr Thr Pro Phe Lys Ile Thr Thr Leu
                965                 970                 975
Lys Thr Thr Thr Leu Ala Pro Lys Val Thr Thr Thr Lys Lys Thr Ile
            980                 985                 990
Thr Thr Thr Glu Ile Met Asn Lys Pro Glu Glu Thr Ala Lys Pro Lys
        995                1000                1005
Asp Arg Ala Thr Asn Ser Lys Ala Thr Thr Pro Lys Pro Gln Lys Pro
   1010                1015                1020
Thr Lys Ala Pro Lys Lys Pro Thr Ser Thr Lys Lys Pro Lys Thr Met
```

```
1025                1030                1035                1040
 Pro Arg Val Arg Lys Pro Lys Thr Thr Pro Thr Pro Arg Lys Met Thr
                1045                1050                1055
 Ser Thr Met Pro Glu Leu Asn Pro Thr Ser Arg Ile Ala Glu Ala Met
            1060                1065                1070
 Leu Gln Thr Thr Thr Arg Pro Asn Gln Thr Pro Asn Ser Lys Leu Val
        1075                1080                1085
 Glu Val Asn Pro Lys Ser Glu Asp Ala Gly Gly Ala Glu Gly Glu Thr
    1090                1095                1100
 Pro His Met Leu Leu Arg Pro His Val Phe Met Pro Glu Val Thr Pro
1105                1110                1115                1120
 Asp Met Asp Tyr Leu Pro Arg Val Pro Asn Gln Gly Ile Ile Ile Asn
                1125                1130                1135
 Pro Met Leu Ser Asp Glu Thr Asn Ile Cys Asn Gly Lys Pro Val Asp
            1140                1145                1150
 Gly Leu Thr Thr Leu Arg Asn Gly Thr Leu Val Ala Phe Arg Gly His
        1155                1160                1165
 Tyr Phe Trp Met Leu Ser Pro Phe Ser Pro Pro Ser Pro Ala Arg Arg
    1170                1175                1180
 Ile Thr Glu Val Trp Gly Ile Pro Ser Pro Ile Asp Thr Val Phe Thr
1185                1190                1195                1200
 Arg Cys Asn Cys Glu Gly Lys Thr Phe Phe Phe Lys Asp Ser Gln Tyr
                1205                1210                1215
 Trp Arg Phe Thr Asn Asp Ile Lys Asp Ala Gly Tyr Pro Lys Pro Ile
            1220                1225                1230
 Phe Lys Gly Phe Gly Gly Leu Thr Gly Gln Ile Val Ala Ala Leu Ser
        1235                1240                1245
 Thr Ala Lys Tyr Lys Asn Trp Pro Glu Ser Val Tyr Phe Phe Lys Arg
    1250                1255                1260
 Gly Gly Ser Ile Gln Gln Tyr Ile Tyr Lys Gln Glu Pro Val Gln Lys
1265                1270                1275                1280
 Cys Pro Gly Arg Arg Pro Ala Leu Asn Tyr Pro Val Tyr Gly Glu Thr
                1285                1290                1295
 Asp Thr Gly  *
        1299
```

<210> 1848
<211> 103
<212> PRT
<213> Homo sapiens

<400> 1848

```
 Met Asn Pro Ala Val Arg Gln Arg Cys Leu Leu Phe Cys Phe Gln Gln
   1               5                  10                  15
 Lys Leu Ile Leu Ser His Phe Phe Leu Leu Gln Val Pro Gln Trp Cys
              20                  25                  30
 Ala Glu Tyr Cys Leu Ser Ile His Tyr Gln His Gly Gly Val Ile Cys
          35                  40                  45
 Thr Gln Val His Lys Gln Thr Val Val Gln Leu Ala Leu Arg Val Ala
      50                  55                  60
 Asp Glu Met Asp Val Asn Ile Gly His Glu Val Gly Tyr Val Ile Pro
  65                  70                  75                  80
 Phe Glu Asn Cys Cys Thr Asn Glu Thr Ile Leu Arg Leu Val Cys Gly
                  85                  90                  95
 Val Gln Ser Ala Pro Cys  *
              100     102
```

<210> 1849
<211> 50
<212> PRT
<213> Homo sapiens

<400> 1849
Met Ser Arg Phe Leu Leu Pro Arg Glu Gly Cys Leu Leu Ile Val Phe
1 5 10 15
Met Leu Cys Glu Lys Thr Leu Pro Phe Leu Phe Thr Leu Lys Glu Tyr
20 25 30
Thr Phe Ile Pro Glu His Arg Thr Thr Asp Ile Asn Cys Val Asn Thr
35 40 45
His Glu
50

<210> 1850
<211> 84
<212> PRT
<213> Homo sapiens

<400> 1850
Met Arg Leu His Ser Lys Gly Ser Gln Asp Pro Ser Thr Lys Val His
1 5 10 15
Ile Lys Ala Leu Gln Thr Val Thr Ser Phe Leu Met Leu Phe Ala Ile
20 25 30
Tyr Phe Leu Cys Ile Ile Thr Ser Thr Trp Asn Leu Arg Thr Gln Gln
35 40 45
Ser Lys Leu Val Leu Leu Leu Cys Gln Thr Val Ala Ile Met Tyr Pro
50 55 60
Ser Phe His Ser Phe Ile Leu Ile Met Gly Ser Arg Lys Leu Lys Gln
65 70 75 80
Thr Phe Leu Ser
84

<210> 1851
<211> 51
<212> PRT
<213> Homo sapiens

<400> 1851
Met Ala Ala Cys Lys Leu Leu Lys His Leu Asn Gly Phe Ser Leu Leu
1 5 10 15
Leu Pro Arg Leu Glu Cys Asn Gly Val Ile Ser Val His Cys Asn Pro
20 25 30
Leu Pro Pro Gly Phe Lys Arg Phe Ser Cys Pro Ser Leu Leu Ser Ser
35 40 45
Trp Asp *
50

<210> 1852
<211> 54
<212> PRT
<213> Homo sapiens

<400> 1852

```
Met Lys Thr Lys Cys Lys Pro Asn Ile Thr Phe Phe Asn Thr Ile Ile
 1               5                  10                  15
Cys Phe Phe Leu Thr Phe Leu Phe Cys Ile Tyr Ile Asp Ser Leu Leu
            20                  25                  30
Cys Thr Val Pro Lys Asn Pro Ala Gln Ala Val Gln Leu Asn Arg Asp
        35                  40                  45
His Thr Lys Val His  *
    50              53
```

<210> 1853
<211> 129
<212> PRT
<213> Homo sapiens

<400> 1853

```
Met Ala Val Val Arg Val Met Val Val Val Arg Val Thr Ala Val Val
 1               5                  10                  15
Arg Val Met Val Val Val Arg Val Val Val Val Arg Val Met Val Val
            20                  25                  30
Val Arg Ile Thr Ala Val Leu Arg Val Met Val Val Val Arg Ile Met
        35                  40                  45
Ala Val Ile Arg Val Met Val Val Val Arg Val Thr Ala Ile Val Gly
    50                  55                  60
Val Met Val Val Ile Arg Val Thr Ala Ile Val Ser Ile Met Val Val
65                  70                  75                  80
Val Arg Val Met Val Val Val Arg Val Met Val Val Ala Arg Pro Met
                85                  90                  95
Val Val Val Arg Val Met Ala Val Val Arg Val Met Ala Asp Ser Ala
            100                 105                 110
Leu Arg Ala Ile Cys Ser Ser Ser Leu Asn Val Thr Phe Ser Leu Glu
        115                 120                 125
*
```

<210> 1854
<211> 190
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(190)
<223> Xaa = any amino acid or nothing

<400> 1854

```
Met Ser Cys Phe Gly Leu Leu Leu Gly Gly Leu Thr Pro Arg Val Leu
 1               5                  10                  15
Ser Thr Glu Glu Gln Leu Pro Pro Gly Phe Pro Ser Ile Asp Met Gly
            20                  25                  30
Pro Gln Leu Lys Val Val Glu Lys Ala Arg Thr Ala Thr Met Leu Cys
        35                  40                  45
Ala Ala Gly Gly Asn Pro Asp Pro Glu Ile Ser Trp Phe Lys Asp Phe
    50                  55                  60
Leu Pro Val Asp Pro Ala Thr Ser Asn Gly Arg Ile Lys Gln Leu Arg
65                  70                  75                  80
Ser Gly Glu Gln Arg Ala Gly Val Lys Gly Pro Cys Arg Pro Gln Asn
                85                  90                  95
Lys Arg Leu Val Arg Ser Gln His Ser Leu Leu Pro Trp Ala Trp Ala
            100                 105                 110
Pro Pro Gly Leu Ser Gly Gly Tyr Leu Val Gly Trp Ala Gly Ser Tyr
        115                 120                 125
Cys Arg Cys Ala Trp Leu Arg Glu Glu Ser Ser Trp Leu Ala Val Pro
    130                 135                 140
Leu Pro Ser Ser Asp Cys Gln Thr Pro Asp Phe Gly Pro Val Leu Pro
145                 150                 155                 160
Leu Pro Ala His Val Met Cys Gln Cys Gly Gly Leu Phe Lys Gly Ala
                165                 170                 175
Leu Trp Met Leu Thr Leu Leu Leu Pro Cys Xaa Leu Ala  *
            180                 185                 189
```

<210> 1855
<211> 78
<212> PRT
<213> Homo sapiens

<400> 1855

```
Met Val Val Ser Ala Trp Ile Gly Leu Glu Ala Thr Val Val Ala Ala
 1               5                  10                  15
Cys Leu Ala Leu Leu Gly Ser Val Val Arg Glu Thr Ser Thr Ser Ala
            20                  25                  30
Ser Pro Thr Pro Ala Ala Leu Arg Ala Ala Trp Thr Val Tyr Ser Ser
        35                  40                  45
Pro Met Thr Thr Cys Val Phe Ala Val Val Pro Leu Leu Ala Gly Thr
    50                  55                  60
Val Lys Pro Ser Ser Met Cys Val Pro Arg Cys Pro Ala  *
65                  70                  75      77
```

<210> 1856
<211> 67
<212> PRT
<213> Homo sapiens

<400> 1856

```
Met Thr Asn Trp Met Leu Leu Leu Ala Ser Arg Ile Phe Gln Ser Leu
 1               5                  10                  15
Ala Ile Pro Lys Gln Leu Gly Leu Arg Arg Glu Met Pro Ser Gly Ser
            20                  25                  30
Pro Thr Thr Asn Ser Ser Ser Gly Cys Ile Arg Asn Leu Glu Tyr Ser
```

```
         35                  40                  45
Thr Leu Met Gly Ser Glu Met Pro Met Ala Leu Ala Ala Glu Thr Trp
     50                  55                  60
Leu Leu  *
 65  66
```

<210> 1857
<211> 107
<212> PRT
<213> Homo sapiens

<400> 1857

```
Met Leu Leu Met Phe Leu Leu Ala Thr Cys Leu Leu Ala Ile Ile Phe
  1               5                  10                  15
Val Pro Gln Glu Met Gln Thr Leu Arg Val Val Leu Ala Thr Leu Gly
             20                  25                  30
Val Gly Ala Ala Ser Leu Gly Ile Thr Cys Ser Thr Ala Gln Glu Asn
         35                  40                  45
Glu Leu Ile Pro Ser Ile Ile Arg Gly Arg Ala Thr Gly Ile Thr Gly
     50                  55                  60
Asn Phe Ala Asn Ile Gly Gly Ala Leu Ala Ser Leu Val Met Ile Leu
 65                  70                  75                  80
Ser Ile Tyr Ser Arg Pro Leu Pro Trp Ile Ile Tyr Gly Val Phe Ala
                 85                  90                  95
Ile Leu Ser Gly Leu Val Val Leu Leu Leu Pro
            100                 105     107
```

<210> 1858
<211> 134
<212> PRT
<213> Homo sapiens

<400> 1858

```
Met Ile Pro Pro Ala Ile Phe Trp Val Leu Ile Ile Phe Gly Trp Thr
  1               5                  10                  15
Leu Val Tyr Gly Phe Val Tyr Phe Thr Thr Gly Glu Thr Ile Met Asp
             20                  25                  30
Lys Leu Leu Arg Val Leu Tyr Trp Ile Leu Val Lys Thr Phe Phe Arg
         35                  40                  45
Glu Ile Ser Val Ser His Gln Glu Arg Ile Pro Lys Asp Lys Pro Val
     50                  55                  60
Met Leu Val Cys Ala Pro His Ala Asn Gln Phe Val Asp Gly Met Val
 65                  70                  75                  80
Ile Ser Thr His Leu Asp Arg Lys Val Tyr Phe Val Gly Ala Ala Ser
                 85                  90                  95
Ser Phe Arg Lys Tyr Lys Val Val Gly Leu Phe Met Lys Leu Met Ala
            100                 105                 110
Ser Ile Ile Ser Gly Glu Arg His Gln Asp Val Lys Lys Val Leu Thr
        115                 120                 125
Gly Met Ala Thr Glu Lys
    130             134
```

<210> 1859
<211> 82
<212> PRT
<213> Homo sapiens

<400> 1859

```
Met Phe Tyr Val Lys Ala Glu Phe Leu Val Ser Phe Ser Cys Pro Trp
 1               5                  10                  15
Leu Thr Ala Cys Ala Leu Leu Met Ser Cys Ser Trp Phe Leu Thr Leu
            20                  25                  30
Thr Ile Leu Ser Val Lys Gly Gly Thr Pro Ala Gly Met Leu Asp Gln
        35                  40                  45
Lys Lys Gly Lys Phe Ala Trp Phe Ser His Ser Thr Glu Thr His Gly
    50                  55                  60
Asn Val Pro Leu Cys Ser Val Cys Val Asn Ala Cys Gly Cys Ile Pro
65                  70                  75                  80
Asp  *
 81
```

<210> 1860
<211> 46
<212> PRT
<213> Homo sapiens

<400> 1860

```
Met Pro Leu Ser Pro Leu Leu Phe His Leu Gly Pro Phe Pro Phe Lys
 1               5                  10                  15
Ala Glu Ser Trp Leu Asn Phe Leu Pro Pro Pro Phe Phe Pro Leu Leu
            20                  25                  30
Pro Leu Leu Phe Leu Ala Lys Ala Glu Ile Gln Trp Ala  *
        35                  40                  45
```

<210> 1861
<211> 128
<212> PRT
<213> Homo sapiens

<400> 1861

```
Met Thr Ile Phe Phe Ser Leu Leu Val Leu Ala Ile Cys Ile Ile Leu
 1               5                  10                  15
Val His Leu Leu Ile Arg Tyr Arg Leu His Phe Leu Pro Glu Ser Val
            20                  25                  30
Ala Val Val Ser Leu Gly Ile Leu Met Gly Ala Val Ile Lys Ile Ile
        35                  40                  45
Glu Phe Lys Lys Leu Ala Asn Trp Lys Glu Glu Glu Met Phe Arg Pro
    50                  55                  60
Asn Met Phe Phe Leu Leu Leu Leu Pro Pro Ile Ile Phe Glu Ser Gly
65                  70                  75                  80
Tyr Ser Leu His Lys Gly Asn Phe Phe Gln Asn Ile Gly Ser Ile Thr
                85                  90                  95
Leu Phe Ala Val Phe Gly Thr Ala Ile Ser Ala Phe Val Val Gly Gly
```

```
            100                 105                 110
Gly Ile Tyr Phe Leu Gly Gln Ala His Val Ile Ser Lys Leu Asn Met
        115                 120                 125         128
```

<210> 1862
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1862

```
Met Trp Asp Met Leu Pro Trp Gly Ile Thr Trp Val Leu Leu Thr Thr
  1               5                  10                  15
Gln Leu His Ser Pro Leu Leu Tyr Val Ile Gly Phe Thr Tyr Trp Val
             20                  25                  30
Cys Lys Gly Asp Arg Asp Ser Tyr Leu Glu Glu Asn Ser Arg Glu Thr
         35                  40                  45
Ala Ser Val Tyr Thr Ser Val Leu Ser  *
     50                  55      57
```

<210> 1863
<211> 50
<212> PRT
<213> Homo sapiens

<400> 1863

```
Met Thr Gln Asp Leu Val Leu Thr Val Pro Phe Met Gly Cys Leu Leu
  1               5                  10                  15
Ile Leu Val Asp Gly Leu Lys Pro Asn Arg Pro Ala Tyr Ile Gln Thr
             20                  25                  30
Gly Ser Gln Ala Thr Gln Ala Gly Val Gln Trp His Asn Tyr Gly Ser
         35                  40                  45
Leu  *
 49
```

<210> 1864
<211> 90
<212> PRT
<213> Homo sapiens

<400> 1864

```
Met Val Ala Ser Ala Ala Gln Leu Leu Ser His Val Cys Leu Gly Gly
  1               5                  10                  15
Leu Gln Leu Leu His Ser Phe Leu Ser Ser Leu Gln Leu Pro Ala Leu
             20                  25                  30
Leu Leu Lys Leu Ala Pro Glu Ala Leu Ala Leu Phe Thr Ser Ile Leu
         35                  40                  45
Lys Ser Ala Leu Val Val His Asp Phe Ser Thr Gln Leu Glu Leu Glu
     50                  55                  60
```

```
Gly Val Glu Leu Leu Val Cys Ser Pro Leu Glu Ala Leu Gly Pro Leu
 65                  70                  75                  80
Leu Cys Leu Gly Glu Leu Gly Leu Gln Ala
                 85                  90
```

<210> 1865
<211> 125
<212> PRT
<213> Homo sapiens

<400> 1865

```
Met Arg Leu Gly Leu Leu Leu Leu Ala Arg His Trp Cys Ile Ala Gly
  1               5                  10                  15
Val Phe Pro Gln Lys Phe Asp Gly Asp Ser Ala Tyr Val Gly Met Ser
             20                  25                  30
Asp Gly Asn Pro Glu Leu Leu Ser Thr Ser Gln Thr Tyr Asn Gly Gln
         35                  40                  45
Ser Glu Asn Asn Glu Asp Tyr Glu Ile Pro Pro Ile Thr Pro Pro Asn
     50                  55                  60
Leu Pro Glu Pro Ser Leu Leu His Leu Gly Asp His Glu Ala Ser Tyr
 65                  70                  75                  80
His Ser Leu Cys His Gly Leu Thr Pro Asn Gly Leu Leu Pro Ala Tyr
                 85                  90                  95
Ser Tyr Gln Ala Met Asp Leu Pro Ala Ile Met Val Ser Asn Met Leu
            100                 105                 110
Ala Gln Asp Ser His Leu Leu Ser Gly Gln Leu Pro Thr
        115                 120                 125
```

<210> 1866
<211> 129
<212> PRT
<213> Homo sapiens

<400> 1866

```
Met Cys Phe Leu Asn Lys Leu Leu Leu Leu Ala Ala Leu Asp Trp Leu
  1               5                  10                  15
Phe Gln Ile Pro Thr Val Pro Glu Asp Leu Phe Phe Leu Glu Glu Gly
             20                  25                  30
Pro Ser Tyr Ala Phe Glu Val Asp Thr Val Ala Pro Glu His Gly Leu
         35                  40                  45
Asp Asn Ala Pro Val Val Asp Gln Gln Leu Leu Tyr Thr Cys Cys Pro
     50                  55                  60
Tyr Ile Gly Glu Leu Arg Lys Leu Leu Ala Ser Trp Val Ser Gly Ser
 65                  70                  75                  80
Ser Gly Arg Ser Gly Gly Phe Met Arg Lys Ile Thr Pro Thr Thr Thr
                 85                  90                  95
Thr Ser Leu Gly Ala Gln Pro Ser Gln Thr Ser Gln Gly Leu Gln Ala
            100                 105                 110
Gln Leu Ala Gln Ala Phe Phe His Asn Gln Pro Pro Ser Leu Arg Arg
        115                 120                 125
Thr
129
```

<210> 1867
<211> 80
<212> PRT
<213> Homo sapiens

<400> 1867
Met Met Arg Leu Glu Lys Phe Val Thr Trp Ser Val Met Ala Leu Gly
1 5 10 15
Trp Phe Val Phe Arg Gln Gln Asn Cys Trp Ala Leu Trp Ser Lys Ser
20 25 30
Val Leu Ile Ser Trp Ser Arg Pro Leu Thr Arg Ser Met Ser Asp Leu
35 40 45
Arg Arg Lys Arg Thr Ala His Glu Arg Ala Lys Glu Leu Tyr Ser Ser
50 55 60
Gly Glu Phe Ser Ser Gly Arg Lys Trp Gly Asp Asp Ala Pro Lys Glu
65 70 75 80

<210> 1868
<211> 113
<212> PRT
<213> Homo sapiens

<400> 1868
Met Leu Val Trp Leu Tyr Gly Thr Ile Arg Trp Pro Ala Leu Gly Ala
1 5 10 15
Pro Arg Trp Trp Pro Trp Val Trp Pro Pro Gly Val Trp Ser Gly Ile
20 25 30
Glu Thr Pro Ser Ser Thr Pro Arg Ala Arg Ser Leu Arg Gly Thr Gly
35 40 45
Gly Ala Val Thr Arg Arg Thr Gly Ser Ser Phe Pro Trp Thr Thr Thr
50 55 60
Thr Arg Pro Ser Ser Trp Trp Thr Thr Ala His Thr Ala Ala Trp Gly
65 70 75 80
Ala Arg Thr Ala Ser Ala Cys Ala Trp Ser Pro Thr Ser His Ser Lys
85 90 95
Thr Arg Pro Trp Gln Gly Leu Glu Leu Thr Ser Leu Ala Cys Ser Ser
100 105 110 112
*

<210> 1869
<211> 72
<212> PRT
<213> Homo sapiens

<400> 1869
Met Phe Leu Trp Val Lys Arg Leu Leu Phe Ala Ala Ser Leu Leu Ala
1 5 10 15

```
Ser Asp Ser Ser Thr Ile Leu Cys Ser Arg Asp Leu Ile Leu Glu Ser
            20                  25                  30
Ile Ala Leu Ile Ile Ala Phe Cys Ser Leu Arg Ile Leu Pro Phe Ser
        35                  40                  45
Trp Ala Ser Ser Ser Cys Leu Cys Ile Met Phe Ser Ser Val Ser Leu
    50                  55                  60
Ser Ala Arg Ser Phe Phe Ile  *
65                  70  71
```

<210> 1870
<211> 197
<212> PRT
<213> Homo sapiens

<400> 1870

```
Met Arg Thr Leu Leu Thr Ile Leu Thr Val Gly Ser Leu Ala Ala His
 1               5                  10                  15
Ala Pro Glu Asp Pro Ser Asp Leu Leu Gln His Val Lys Phe Gln Ser
            20                  25                  30
Ser Asn Phe Glu Asn Ile Leu Thr Trp Asp Ser Gly Pro Glu Gly Thr
        35                  40                  45
Pro Asp Thr Val Tyr Ser Ile Glu Tyr Lys Thr Tyr Gly Glu Arg Asp
    50                  55                  60
Trp Val Ala Lys Lys Gly Cys Gln Arg Ile Thr Arg Lys Ser Cys Asn
65                  70                  75                  80
Leu Thr Val Glu Thr Gly Asn Leu Thr Glu Leu Tyr Tyr Ala Arg Val
                85                  90                  95
Thr Ala Val Ser Ala Gly Gly Arg Ser Ala Thr Lys Met Thr Asp Arg
            100                 105                 110
Phe Ser Ser Leu Gln His Thr Thr Leu Lys Pro Pro Asp Val Thr Cys
        115                 120                 125
Ile Ser Lys Val Arg Ser Ile Gln Met Ile Val His Pro Thr Pro Thr
    130                 135                 140
Pro Ile Arg Ala Gly Asp Gly His Arg Leu Thr Leu Glu Asp Ile Phe
145                 150                 155                 160
His Asp Leu Phe Tyr His Leu Glu Leu Gln Val Asn Arg Thr Tyr Gln
                165                 170                 175
Met Val Ser Val Cys Cys Thr Leu Val Phe Leu Cys Leu Gly Ser Leu
            180                 185                 190
Phe Pro Pro Asn  *
        195 196
```

<210> 1871
<211> 75
<212> PRT
<213> Homo sapiens

<400> 1871

```
Met Glu Tyr Arg Leu Gln Lys Gly Ala Gly Phe His Leu Asp Leu Phe
 1               5                  10                  15
Cys Val Ala Val Leu Met Leu Leu Thr Ser Ala Leu Gly Leu Pro Trp
            20                  25                  30
Tyr Val Ser Ala Thr Val Ile Ser Leu Ala His Met Asp Ser Leu Arg
```

```
         35                  40                  45
Arg Glu Ser Arg Ala Cys Ala Pro Gly Glu Arg Pro Asn Phe Leu Gly
     50                  55                  60
Ile Arg Glu Gln Arg Leu Thr Gly Leu Val Val
 65                  70                  75
```

<210> 1872
<211> 84
<212> PRT
<213> Homo sapiens

<400> 1872

```
Met Pro Phe Ser Thr Cys Thr Ala Leu Pro Ser Trp Ala Thr Leu Ser
  1               5                  10                  15
Thr Trp Ser Trp Thr Pro Lys Val Ser Leu Ala Gly Glu Glu Arg Gly
             20                  25                  30
Glu Thr Cys Gln Pro Asp Pro Phe Pro Pro His Pro Ser Cys Ser Val
         35                  40                  45
Gly Arg Thr Pro Pro His Ser Ser Leu Gly Ser Pro Pro Thr Thr Leu
     50                  55                  60
Phe Leu Ser Pro Leu Leu Arg Val Glu Ser Arg Gly Ala Lys Cys Val
 65                  70                  75                  80
Val Cys Cys  *
             83
```

<210> 1873
<211> 51
<212> PRT
<213> Homo sapiens

<400> 1873

```
Met Cys Gly Ser Pro Glu Arg Leu Cys Val Arg Cys Ala Arg Val Cys
  1               5                  10                  15
Ala Val Phe Met Arg Ala Leu Cys Val Val Cys Val Tyr Leu Arg Arg
             20                  25                  30
Arg Ile Lys Tyr Glu Arg Phe Leu Gly Trp Glu Leu Arg Cys Lys Ile
         35                  40                  45
Trp Gly  *
     50
```

<210> 1874
<211> 503
<212> PRT
<213> Homo sapiens

<400> 1874

```
Met Ser Leu Val Leu Leu Ser Leu Ala Ala Leu Cys Arg Ser Ala Val
  1               5                  10                  15
Pro Arg Glu Pro Thr Val Gln Cys Gly Ser Glu Thr Gly Pro Ser Pro
             20                  25                  30
```

```
Glu Trp Met Leu Gln His Asp Leu Ile Pro Gly Asp Leu Arg Asp Leu
        35                  40                  45
Arg Val Glu Pro Val Thr Thr Ser Val Ala Thr Gly Asp Tyr Ser Ile
    50                  55                  60
Leu Met Asn Val Ser Trp Val Leu Arg Ala Asp Ala Ser Ile Arg Leu
65                  70                  75                  80
Leu Lys Ala Thr Lys Ile Cys Val Thr Gly Lys Ser Asn Phe Gln Ser
                85                  90                  95
Tyr Ser Cys Val Arg Cys Asn Tyr Thr Glu Ala Phe Gln Thr Gln Thr
            100                 105                 110
Arg Pro Ser Gly Gly Lys Trp Thr Phe Ser Tyr Ile Gly Phe Pro Val
        115                 120                 125
Glu Leu Asn Thr Val Tyr Phe Ile Gly Ala His Asn Ile Pro Asn Ala
    130                 135                 140
Asn Met Asn Glu Asp Gly Pro Ser Met Ser Val Asn Phe Thr Ser Pro
145                 150                 155                 160
Gly Cys Leu Asp His Ile Met Lys Tyr Lys Lys Lys Cys Val Lys Ala
                165                 170                 175
Gly Ser Leu Trp Asp Pro Asn Ile Thr Ala Cys Lys Lys Asn Glu Glu
            180                 185                 190
Thr Val Glu Val Asn Phe Thr Thr Thr Pro Leu Gly Asn Arg Tyr Met
        195                 200                 205
Ala Leu Ile Gln His Ser Thr Ile Ile Gly Phe Ser Gln Val Phe Glu
    210                 215                 220
Pro His Gln Lys Lys Gln Thr Arg Ala Ser Val Val Ile Pro Val Thr
225                 230                 235                 240
Gly Asp Ser Glu Gly Ala Thr Val Gln Leu Thr Pro Tyr Phe Pro Thr
                245                 250                 255
Cys Gly Ser Asp Cys Ile Arg His Lys Gly Thr Val Val Leu Cys Pro
            260                 265                 270
Gln Thr Gly Val Pro Phe Pro Leu Asp Asn Asn Lys Ser Lys Pro Gly
        275                 280                 285
Gly Trp Leu Pro Leu Leu Leu Leu Ser Leu Leu Val Ala Thr Trp Val
    290                 295                 300
Leu Val Ala Gly Ile Tyr Leu Met Trp Arg His Glu Arg Ile Lys Lys
305                 310                 315                 320
Thr Ser Phe Ser Thr Thr Thr Leu Leu Pro Pro Ile Lys Val Leu Val
                325                 330                 335
Val Tyr Pro Ser Glu Ile Cys Phe His His Thr Ile Cys Tyr Phe Thr
            340                 345                 350
Glu Phe Leu Gln Asn His Cys Arg Ser Glu Val Ile Leu Glu Lys Trp
        355                 360                 365
Gln Lys Lys Lys Ile Ala Glu Met Gly Pro Val Gln Trp Leu Ala Thr
    370                 375                 380
Gln Lys Lys Ala Ala Asp Lys Val Val Phe Leu Leu Ser Asn Asp Val
385                 390                 395                 400
Asn Ser Val Cys Asp Gly Thr Cys Gly Lys Ser Glu Gly Ser Pro Ser
                405                 410                 415
Glu Asn Ser Gln Asp Leu Phe Pro Leu Ala Phe Asn Leu Phe Cys Ser
            420                 425                 430
Asp Leu Arg Ser Gln Ile His Leu His Lys Tyr Val Val Val Tyr Phe
        435                 440                 445
Arg Glu Ile Asp Thr Lys Asp Asp Tyr Asn Ala Leu Ser Val Cys Pro
    450                 455                 460
Lys Tyr His Leu Met Lys Asp Ala Thr Ala Phe Cys Ala Glu Leu Leu
465                 470                 475                 480
His Val Lys Gln Gln Val Ser Ala Gly Lys Arg Ser Gln Ala Cys His
                485                 490                 495
Asp Gly Cys Cys Ser Leu  *
```

500 502

<210> 1875
<211> 158
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(158)
<223> Xaa = any amino acid or nothing

<400> 1875
Met Xaa Pro Pro Thr Arg Pro Arg Thr Arg Gly Val Gly Ile Phe Tyr
1 5 10 15
Phe Val Ile Tyr Ile Ile Ile Ser Phe Leu Val Val Val Asn Met Tyr
20 25 30
Ile Ala Val Ile Leu Glu Asn Phe Ser Val Ala Thr Glu Glu Ser Thr
35 40 45
Glu Pro Leu Ser Glu Asp Asp Phe Glu Met Phe Tyr Glu Val Trp Glu
50 55 60
Lys Phe Asp Pro Asp Ala Thr Gln Phe Ile Glu Phe Ser Lys Leu Ser
65 70 75 80
Asp Phe Ala Ala Ala Leu Asp Pro Pro Leu Leu Ile Ala Lys Pro Asn
85 90 95
Lys Val Gln Leu Ile Ala Met Asp Leu Pro Met Val Ser Gly Asp Arg
100 105 110
Ile His Cys Leu Asp Ile Leu Phe Ala Phe Thr Lys Arg Val Leu Gly
115 120 125
Glu Ser Gly Glu Met Asp Ser Leu Arg Ser Gln Met Glu Glu Arg Phe
130 135 140
Met Ser Ala Asn Pro Ser Lys Val Ser Tyr Glu Pro Ile Thr
145 150 155 158

<210> 1876
<211> 106
<212> PRT
<213> Homo sapiens

<400> 1876
Met Gly Asn Arg Ala Val Ile Ile Ala Arg Gln Leu Ser Ser Val His
1 5 10 15
Thr Leu Ile Cys Asn Phe Phe Trp Leu Leu Leu Arg Thr Thr Gly Gly
20 25 30
Asp Leu Asp Ser Leu Lys Cys Ser Tyr Glu Ser Ile Gly Leu Asn Ser
35 40 45
Ile Ser Thr His Glu Phe Ile Cys Thr Trp Gln Arg Arg Leu Asn Phe
50 55 60
Ser Phe Val Met Ser Phe Lys Pro Leu Phe Arg Ala Ser Pro His Ser
65 70 75 80
Tyr Leu Leu Ile Ile Gly Ser Gln Leu His Glu Thr Phe Asn Leu Gly
85 90 95
Ser Ile Ser Ser Glu Glu Lys Cys Ser *
100 105

<210> 1877
<211> 241
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(241)
<223> Xaa = any amino acid or nothing

<400> 1877
Met Leu Trp Ala Leu Trp Pro Arg Trp Leu Ala Asp Lys Met Leu Pro
1 5 10 15
Leu Leu Gly Ala Val Leu Leu Gln Lys Arg Glu Lys Arg Gly Pro Leu
20 25 30
Trp Arg His Trp Arg Arg Glu Thr Tyr Pro Tyr Tyr Asp Leu Gln Val
35 40 45
Lys Val Leu Arg Ala Thr Asn Ile Arg Gly Thr Asp Leu Leu Ser Lys
50 55 60
Ala Asp Cys Tyr Val Gln Leu Trp Leu Pro Thr Ala Ser Pro Ser Pro
65 70 75 80
Ala Gln Thr Arg Ile Val Ala Asn Cys Ser Asp Pro Glu Trp Asn Glu
85 90 95
Thr Phe His Tyr Gln Ile His Gly Ala Val Lys Asn Val Leu Glu Leu
100 105 110
Thr Leu Tyr Asp Lys Asp Ile Leu Gly Ser Asp Gln Leu Ser Leu Leu
115 120 125
Leu Phe Asp Leu Arg Ser Leu Lys Cys Gly Gln Pro His Lys His Thr
130 135 140
Phe Pro Leu Asn His Gln Asp Ser Gln Glu Leu Gln Val Glu Phe Val
145 150 155 160
Leu Glu Lys Ser Gln Glu Pro Ala Ser Glu Val Ile Thr Asn Gly Val
165 170 175
Leu Gly Ala His Pro Trp Leu Arg Met Lys Gly Met Ile Leu Gly Glu
180 185 190
Gly Arg Ala Pro Arg Gln Gln His Gly Gln Ser Trp Glu Gly Gly Val
195 200 205
Gly Pro Ser Pro Leu Ser Xaa Xaa Xaa Asn Thr Gly Gly Lys Ile Val
210 215 220
Gly Phe Trp Glu Glu Met Ala Asn Gly Thr Gly Ala Pro Pro Arg Pro
225 230 235 240
Pro
241

<210> 1878
<211> 50
<212> PRT
<213> Homo sapiens

<400> 1878
Met Leu Leu Met Leu Leu Phe Arg Cys Cys Ser Ser Lys Asp Leu Trp
1 5 10 15
Pro Val Leu Ile Ala His Leu Val Pro Gln Gly Gly Gln Glu Gly Asn

```
            20                  25                  30
Val Gly Glu Gln Thr Lys Gly Lys Ser Asn Arg Val Leu Pro Val Phe
        35                  40                  45
Leu  *
 49
```

<210> 1879
<211> 56
<212> PRT
<213> Homo sapiens

<400> 1879

```
Met Cys Ser Ala Phe Ser Ser Phe Trp Trp Val Pro Pro Leu Ala Gly
  1               5                  10                  15
Ser Gly Val Lys Leu Gln Thr Phe Thr Ala Ser Val Thr Ala His Lys
            20                  25                  30
Arg Ser Thr Asp Pro Lys Ser Glu Gln Gln Leu Asp Leu Ser Gln Arg
        35                  40                  45
Thr Lys Glu Gln Ser Leu Thr Lys
    50                  55  56
```

<210> 1880
<211> 161
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(161)
<223> Xaa = any amino acid or nothing

<400> 1880

```
Met Pro Ser Ala Ser Leu Leu Val Asn Leu Leu Ser Ala Leu Leu Ile
  1               5                  10                  15
Leu Phe Val Phe Gly Glu Thr Glu Ile Arg Phe Thr Gly Gln Thr Glu
            20                  25                  30
Phe Val Val Asn Glu Thr Ser Thr Thr Val Ile Arg Leu Ile Ile Glu
        35                  40                  45
Arg Ile Gly Glu Pro Ala Asn Val Thr Ala Ile Val Ser Leu Tyr Gly
    50                  55                  60
Glu Asp Ala Gly Asp Phe Phe Asp Thr Tyr Ala Ala Ala Phe Ile Pro
65                  70                  75                  80
Ala Gly Glu Thr Asn Arg Thr Val Tyr Ile Ala Val Cys Asp Asp Asp
                85                  90                  95
Leu Pro Glu Pro Asp Glu Thr Phe Ile Phe His Leu Thr Leu Gln Lys
            100                 105                 110
Pro Ser Ala Asn Val Lys Leu Gly Trp Pro Arg Thr Val Thr Val Thr
        115                 120                 125
Ile Leu Ser Asn Gly Gln Met Ala Phe Trp Glu Phe Ile Phe Ile Leu
    130                 135                 140
Asn Ile Gly Leu Pro Pro Pro Ile Pro Pro Ser Gly Xaa Leu Lys Ala
145                 150                 155                 160
Pro
161
```

<210> 1881
<211> 130
<212> PRT
<213> Homo sapiens

<400> 1881

```
Met Gly Ile Tyr Gln Met Tyr Leu Cys Phe Leu Leu Ala Val Leu Leu
  1               5                  10                  15
Gln Leu Tyr Val Ala Thr Glu Ala Ile Leu Ile Ala Leu Val Gly Ala
             20                  25                  30
Thr Pro Ser Tyr His Trp Asp Leu Ala Glu Leu Leu Pro Asn Gln Ser
         35                  40                  45
His Gly Asn Gln Ser Ala Gly Glu Asp Gln Ala Phe Gly Asp Trp Leu
     50                  55                  60
Leu Thr Ala Asn Gly Ser Glu Ile His Lys His Val His Phe Ser Ser
 65                  70                  75                  80
Ser Phe Thr Ser Ile Ala Ser Glu Trp Phe Leu Ile Ala Asn Arg Ser
                 85                  90                  95
Tyr Lys Val Ser Ala Ala Ser Ser Phe Phe Phe Ser Gly Val Phe Val
            100                 105                 110
Gly Val Ile Ser Phe Gly Gln Leu Ser Asp Arg Phe Gly Arg Lys Lys
        115                 120                 125
Val Tyr
    130
```

<210> 1882
<211> 108
<212> PRT
<213> Homo sapiens

<400> 1882

```
Met Leu Trp Phe Ser Gly Val Gly Ala Leu Ala Glu Arg Tyr Cys Arg
  1               5                  10                  15
Arg Ser Pro Gly Ile Thr Cys Cys Val Leu Leu Leu Leu Asn Cys Ser
             20                  25                  30
Gly Val Pro Met Ser Leu Ala Ser Ser Phe Leu Thr Gly Ser Val Ala
         35                  40                  45
Lys Cys Glu Asn Glu Gly Glu Val Leu Gln Ile Pro Phe Ile Thr Asp
     50                  55                  60
Asn Pro Cys Ile Met Cys Val Cys Leu Asn Lys Glu Val Thr Cys Lys
 65                  70                  75                  80
Arg Glu Lys Cys Pro Val Leu Ser Arg Asp Cys Ala Leu Ala Ile Lys
                 85                  90                  95
Gln Arg Gly Ala Cys Cys Glu Gln Cys Lys Gly Cys
            100                 105         108
```

<210> 1883
<211> 88
<212> PRT
<213> Homo sapiens

<400> 1883
Met Leu Phe Tyr Leu Val Ser Val Cys Leu Cys Val Ala Val Ile Val
1 5 10 15
Ala Phe Gln Leu Thr Ala Phe Thr Phe Arg Lys Asn Leu Ala Ala Thr
20 25 30
Ala Leu Leu Leu Ser Leu Phe Gly Tyr Ala Thr Leu Pro Trp Met Tyr
35 40 45
Leu Met Ser Arg Ile Phe Ser Ser Ser Asp Val Ala Phe Ile Ser Tyr
50 55 60
Val Ser Leu Asn Phe Ile Phe Gly Leu Cys Thr Met Leu Ile Thr Ile
65 70 75 80
Met Pro Arg Leu Leu Ala Ile Ile
85 88

<210> 1884
<211> 116
<212> PRT
<213> Homo sapiens

<400> 1884
Met Cys Trp Ala Arg Cys Trp Thr Arg Trp Asn Thr Cys Thr Ile Trp
1 5 10 15
Thr Ser Ser Thr Asp Pro Phe Arg Lys Cys Trp Met Ala Pro Glu Ala
20 25 30
Leu Asn Phe Ser Phe Ser His Lys Ser Asp Ile Trp Ser Leu Gly Cys
35 40 45
Ile Ile Leu Asp Met Thr Ser Cys Ser Phe Met Asp Gly Thr Glu Ala
50 55 60
Met His Leu Arg Lys Ser Leu Arg Gln Ser Pro Gly Ser Leu Lys Ala
65 70 75 80
Val Leu Lys Thr Met Glu Glu Lys Gln Ile Pro Asp Val Glu Thr Phe
85 90 95
Arg Asn Leu Leu Pro Leu Met Leu Gln Ile Asp Pro Ser Asp Arg Ile
100 105 110
Thr Ile Lys *
115

<210> 1885
<211> 115
<212> PRT
<213> Homo sapiens

<400> 1885
Met Ser Glu Arg Val Glu Arg Asn Trp Ser Thr Gly Gly Trp Leu Leu
1 5 10 15
Ala Leu Cys Leu Ala Trp Leu Trp Thr His Leu Thr Leu Ala Ala Leu
20 25 30
Gln Pro Pro Thr Ala Thr Val Leu Val Gln Gln Gly Thr Cys Glu Val
35 40 45
Ile Ala Ala His Arg Cys Cys Asn Arg Asn Arg Ile Glu Glu Arg Ser
50 55 60

```
Gln Thr Val Lys Cys Ser Cys Phe Ser Gly Gln Val Ala Gly Thr Thr
 65                  70                  75                  80
Arg Ala Lys Pro Ser Cys Val Asp Asp Leu Leu Leu Ala Ala His Cys
                85                  90                  95
Ala Arg Arg Asp Pro Arg Ala Ala Leu Arg Leu Leu Leu Pro Gln Pro
            100                 105                 110
Pro Ser Ser
        115
```

<210> 1886
<211> 357
<212> PRT
<213> Homo sapiens

<400> 1886

```
Met Ile Leu Ser Leu Leu Phe Ser Leu Gly Gly Pro Leu Gly Trp Gly
  1                 5                  10                  15
Leu Leu Gly Ala Trp Ala Gln Ala Ser Ser Thr Ser Leu Ser Asp Leu
            20                  25                  30
Gln Ser Ser Arg Thr Pro Gly Val Trp Lys Ala Glu Ala Glu Asp Thr
        35                  40                  45
Gly Lys Asp Pro Val Gly Arg Asn Trp Cys Pro Tyr Pro Met Ser Lys
    50                  55                  60
Leu Val Thr Leu Leu Ala Leu Cys Lys Thr Glu Lys Phe Leu Ile His
 65                  70                  75                  80
Ser Gln Gln Pro Cys Pro Gln Gly Ala Pro Asp Cys Gln Lys Val Lys
                85                  90                  95
Val Met Tyr Arg Met Ala His Lys Pro Val Tyr Gln Val Lys Gln Lys
            100                 105                 110
Val Leu Thr Ser Leu Ala Trp Arg Cys Cys Pro Gly Tyr Thr Gly Pro
        115                 120                 125
Asn Cys Glu His His Asp Ser Met Ala Ile Pro Glu Pro Ala Asp Pro
    130                 135                 140
Gly Asp Ser His Gln Glu Pro Gln Asp Gly Pro Val Ser Phe Lys Pro
145                 150                 155                 160
Gly His Leu Ala Ala Val Ile Asn Glu Val Glu Val Gln Gln Glu Gln
                165                 170                 175
Gln Glu His Leu Leu Gly Asp Leu Gln Asn Asp Val His Arg Val Ala
            180                 185                 190
Asp Ser Leu Pro Gly Leu Trp Lys Ala Leu Pro Gly Asn Leu Thr Ala
        195                 200                 205
Ala Val Met Glu Ala Asn Gln Thr Gly His Glu Phe Pro Asp Arg Ser
    210                 215                 220
Leu Glu Gln Val Leu Leu Pro His Val Asp Thr Phe Leu Gln Val His
225                 230                 235                 240
Phe Ser Pro Ile Trp Arg Ser Phe Asn Gln Ser Leu His Ser Leu Thr
                245                 250                 255
Gln Ala Ile Arg Asn Leu Ser Leu Asp Val Glu Ala Asn Arg Gln Ala
            260                 265                 270
Ile Ser Arg Val Gln Asp Ser Ala Val Ala Arg Ala Asp Phe Gln Glu
        275                 280                 285
Leu Gly Ala Lys Phe Glu Ala Lys Val Gln Glu Asn Thr Gln Arg Val
    290                 295                 300
Gly Gln Leu Arg Gln Asp Val Glu Asp Arg Leu His Ala Gln His Phe
305                 310                 315                 320
Thr Leu His Arg Ser Ile Ser Glu Leu Gln Ala Asp Val Asp Thr Lys
```

```
                325                 330                 335
Leu Lys Arg Leu His Lys Ala Gln Glu Ala Pro Gly Thr Asn Gly Ser
            340                 345                 350
Leu Val Leu Glu Arg
        355     357
```

<210> 1887
<211> 86
<212> PRT
<213> Homo sapiens

<400> 1887

```
Met Leu Cys Ser Arg Leu Gly Thr Thr Ala Ser Trp Arg Arg Leu Gly
  1               5                  10                  15
Ile Arg Ala Trp Ala Pro Leu Leu Leu Leu Phe Pro Trp Asp Trp His
             20                  25                  30
Phe Ile Leu Ser Phe Ser Ser Arg Pro Trp Ala Gly Thr Leu Leu Ala
         35                  40                  45
Pro His Asp Val Ile Met Gly Ser Ser Thr Phe Pro Gln Ser Cys Gln
     50                  55                  60
Ala Glu Ala Gly Pro Arg His Ala Trp Pro Thr Gly Arg Phe Ser Arg
 65                  70                  75                  80
Arg Leu Arg Arg Val  *
                 85
```

<210> 1888
<211> 48
<212> PRT
<213> Homo sapiens

<400> 1888

```
Met Ser Val Arg Arg Ala Leu Thr Pro Ser Ala Leu Gly Leu Val Phe
  1               5                  10                  15
Ile Leu Gln Ile Phe Ala His Gly Leu Pro Gly Pro Gly Pro Cys His
             20                  25                  30
Leu Gly Pro Gly Ile Cys Leu Arg Ile Cys Gln Cys Ala Leu Asn  *
         35                  40                  45      47
```

<210> 1889
<211> 79
<212> PRT
<213> Homo sapiens

<400> 1889

```
Met Ser Val Val Met Leu Ser Tyr Leu Leu Ser Ala Phe Phe Ser Gln
  1               5                  10                  15
Ala Asn Thr Ala Ala Leu Cys Thr Ser Leu Val Tyr Met Ile Ser Phe
             20                  25                  30
Leu Pro Tyr Ile Val Leu Leu Val Leu His Asn Gln Leu Ser Phe Val
         35                  40                  45
```

```
Asn Gln Thr Phe Leu Cys Leu Leu Ser Thr Thr Ala Phe Gly Gln Gly
     50                  55                  60
Val Phe Phe Ile Thr Phe Leu Glu Gly Gln Glu Thr Gly Ile His
 65                  70                  75                  79
```

<210> 1890
<211> 251
<212> PRT
<213> Homo sapiens

<400> 1890

```
Met Asn Val Ile Tyr Phe Pro Leu His Leu Phe Val Val Tyr Ser Arg
  1               5                  10                  15
Ala Tyr Thr Ser Leu Val Leu Val Gly Cys Thr Asn Leu Cys Ala Val
            20                  25                  30
Leu Phe Ala Arg Cys Leu Asp Asp His Leu Val Ser Leu Arg Met Ser
        35                  40                  45
Gly Ser Arg Lys Glu Phe Asp Val Lys Gln Ile Leu Lys Ile Arg Trp
     50                  55                  60
Arg Trp Phe Gly His Gln Ala Ser Ser Pro Asn Ser Thr Val Asp Ser
 65                  70                  75                  80
Gln Gln Gly Glu Phe Trp Asn Arg Gly Gln Thr Gly Ala Asn Gly Gly
                85                  90                  95
Arg Lys Phe Leu Asp Pro Cys Ser Leu Gln Leu Pro Leu Ala Ser Ile
            100                 105                 110
Gly Tyr Arg Arg Ser Ser Gln Leu Asp Phe Gln Asn Ser Pro Ser Trp
        115                 120                 125
Pro Met Ala Ser Thr Ser Glu Val Pro Ala Phe Glu Phe Thr Ala Glu
    130                 135                 140
Asp Cys Gly Gly Ala His Trp Leu Asp Arg Pro Glu Val Asp Asp Gly
145                 150                 155                 160
Thr Ser Glu Glu Glu Asn Glu Ser Asp Ser Ser Ser Cys Arg Thr Ser
                165                 170                 175
Asn Ser Ser Gln Thr Leu Ser Ser Cys His Thr Met Glu Pro Cys Thr
            180                 185                 190
Ser Asp Glu Phe Phe Gln Ala Leu Asn His Ala Glu Gln Thr Phe Lys
        195                 200                 205
Lys Met Glu Asn Tyr Leu Arg His Lys Gln Leu Cys Asp Val Ile Leu
    210                 215                 220
Val Ala Gly Asp Arg Arg Ile Pro Ala His Arg Leu Val Leu Ser Ser
225                 230                 235                 240
Val Ser Asp Tyr Phe Ala Gly Met Phe Thr Asn
                245                 250 251
```

<210> 1891
<211> 117
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(117)
<223> Xaa = any amino acid or nothing

<400> 1891
Met Leu Ile Asp Val Phe Phe Phe Leu Phe Leu Phe Ala Xaa Trp Met
1 5 10 15
Val Ala Phe Gly Val Ala Arg Gln Gly Ile Leu Arg Gln Asn Glu Gln
20 25 30
Arg Trp Arg Trp Ile Phe Arg Ser Val Ile Tyr Glu Pro Tyr Leu Ala
35 40 45
Met Phe Gly Gln Val Pro Ser Asp Val Asp Gly Thr Thr Tyr Asp Phe
50 55 60
Ala His Cys Thr Phe Thr Gly Asn Glu Ser Lys Pro Leu Cys Val Glu
65 70 75 80
Leu Asp Glu His Asn Leu Pro Arg Phe Pro Glu Trp Ile Thr Ile Pro
85 90 95
Leu Val Cys Ile Tyr Met Leu Ser Thr Asn Ile Leu Leu Val Asn Leu
100 105 110
Leu Val Ala Met Phe
115 117

<210> 1892
<211> 103
<212> PRT
<213> Homo sapiens

<400> 1892
Met Leu Cys His Pro His Val His His His Leu Val Cys Leu Leu Ala
1 5 10 15
Thr Leu Thr Phe Ser Leu Asn Ala Ser Cys Ala Glu Gln Thr Phe His
20 25 30
Ser Gln Gln Ser Asn Gly Glu Phe Met Ala Thr Leu Pro Ser Ile Ser
35 40 45
Lys Gln Phe Gly Val Ile Val Trp Lys Pro Gln Arg Lys Asp Val Ile
50 55 60
Arg Leu Pro Val Ala Leu Ser Phe Ser Ser Gly Ala Arg Leu Ala Phe
65 70 75 80
Thr Cys Leu Arg Lys Ile Ser Gly Phe Arg Ala Leu Ile Trp Gly Glu
85 90 95
Asp Lys Gly Trp Asp Leu *
100 102

<210> 1893
<211> 77
<212> PRT
<213> Homo sapiens

<221> misc_feature
<222> (1)...(77)
<223> Xaa = any amino acid or nothing

<400> 1893
Met Leu Ala Ala Gly Val Thr Ser Ala Ala Gly Leu Ala Leu Ala Phe
1 5 10 15
Ser Gly Asp Tyr Leu Lys Ala Phe Ile Asp Val Pro Thr Val Pro Ala
20 25 30

```
Ala Leu Val Phe Leu Leu Leu Val Gly Leu Leu Asn Ala Arg Gly Ile
         35                  40                  45
Lys Glu Ser Met Arg Ala Xaa Val Val Met Thr Val Val Glu Val Thr
     50                  55                  60
Gly Leu Val Leu Val Val Val Leu Ala Leu Val Pro Gly
 65                  70                  75      77
```

<210> 1894
<211> 46
<212> PRT
<213> Homo sapiens

<400> 1894

```
Met Trp Ala Ala Ser Trp Cys Leu Ser Leu Trp Cys Cys Trp Val Trp
  1               5                  10                  15
Ser Gly Thr Ser Glu Ser Ile Thr Ala Asn Ser Ser Gln His Leu Pro
             20                  25                  30
Leu Ser Pro Trp Trp Glu Ser Pro Ser Ser Ser Ala Ser  *
         35                  40                  45
```

<210> 1895
<211> 162
<212> PRT
<213> Homo sapiens

<400> 1895

```
Met Thr Ala Trp Arg Arg Phe Gln Ser Leu Leu Leu Leu Leu Gly Leu
  1               5                  10                  15
Leu Val Leu Cys Ala Arg Leu Leu Thr Ala Ala Lys Gly Gln Asn Cys
             20                  25                  30
Gly Gly Leu Val Gln Gly Pro Asn Gly Thr Ile Glu Ser Pro Gly Phe
         35                  40                  45
Pro His Gly Tyr Pro Asn Tyr Ala Asn Cys Thr Trp Ile Ile Ile Thr
     50                  55                  60
Gly Glu Arg Asn Arg Ile Gln Leu Ser Phe His Thr Phe Ala Leu Glu
 65                  70                  75                  80
Glu Asp Phe Asp Ile Leu Ser Val Tyr Asp Gly Gln Pro Gln Gln Gly
                 85                  90                  95
Asn Leu Lys Val Arg Leu Ser Gly Phe Gln Leu Pro Ser Ser Ile Val
            100                 105                 110
Ser Thr Gly Ser Ile Leu Thr Leu Trp Phe Thr Thr Asp Phe Ala Val
        115                 120                 125
Ser Ala Gln Gly Phe Lys Ala Leu Tyr Glu Gly Arg Arg Leu Val Val
    130                 135                 140
Phe Cys Thr Cys Ile His Cys Pro Asn Asp Leu Ile His Ala Thr Leu
145                 150                 155                 160
Asp  *
161
```

<210> 1896
<211> 60

<212> PRT
<213> Homo sapiens

<400> 1896
Met Leu Ser Leu Pro Cys Gly Trp Leu Cys Thr Ala Ile Gly Leu Pro
1 5 10 15
Thr Met Phe Gly Tyr Ile Ile Cys Gly Val Leu Leu Gly Pro Ser Gly
20 25 30
Leu Asn Ser Ile Lys Val Arg Thr Lys Leu Asp Cys Phe Gly Ile Cys
35 40 45
Leu Thr Glu Tyr Lys Lys Arg Ile His Glu Asp *
50 55 59

<210> 1897
<211> 49
<212> PRT
<213> Homo sapiens

<400> 1897
Met Leu Ile Val Gln Phe Ile Phe Glu Leu Val Ser Ser Ile Leu Val
1 5 10 15
Ser Asn Val Lys Asp Met Leu Asp Phe Glu Ser Gly Phe Cys Ser Lys
20 25 30
Ile Leu Ser Tyr Phe Phe Ser Ser Pro Arg Tyr Arg Leu Pro Phe Leu
35 40 45 48
*

<210> 1898
<211> 52
<212> PRT
<213> Homo sapiens

<400> 1898
Met Thr Trp Ala Gly Leu Phe Leu Phe Leu Arg Val Gly Ser Pro Asn
1 5 10 15
Arg Lys Trp Ala Ala Ser Gly Gly Ser Gly Gly Asp Gly Val Asp Gly
20 25 30
Glu Asp Trp Ser Leu Ala Arg Ser His Pro Gln Ser Pro Leu Leu Leu
35 40 45
Leu Leu Leu *
50 51

<210> 1899
<211> 112
<212> PRT
<213> Homo sapiens

<400> 1899

```
Met Ala Ile Pro Ser Val Val Ile Ser Gly Leu Ala Val Leu Leu Val
  1               5                  10                  15
Ala Met Ala Leu Pro Ser Leu Ser Gly Ser Glu Ala Ile Lys Ser Met
            20                  25                  30
Thr Ile Pro Gly Leu Val Val Pro Thr Val Val Arg Phe Met Ala Val
        35                  40                  45
Pro Gly Leu Ile Val Pro Ala Val Ala Lys Phe Thr Val Leu Pro Asp
    50                  55                  60
Leu Thr Val Pro Thr Glu Asp Lys Ser Leu Ala Val Pro Ser Leu Ile
65                  70                  75                  80
Ser Arg Ala Gly Asn Ser Val Pro Val Ser Ser Trp Asp Val Phe Gly
                85                  90                  95
Val Ala Lys Leu Ile Ala Lys Leu Gly Leu Leu Ala Ala Ile Val Ala
            100                 105                 110     112
```

<210> 1900
<211> 128
<212> PRT
<213> Homo sapiens

<400> 1900

```
Met Arg Val Tyr Gly Thr Cys Thr Leu Val Leu Met Ala Leu Val Val
  1               5                  10                  15
Phe Val Gly Val Lys Tyr Val Asn Lys Leu Ala Leu Val Phe Leu Ala
            20                  25                  30
Cys Val Val Leu Ser Ile Leu Ala Ile Tyr Ala Gly Val Ile Lys Ser
        35                  40                  45
Ala Phe Asp Pro Pro Asp Ile Pro Val Cys Leu Leu Gly Asn Arg Thr
    50                  55                  60
Leu Ser Arg Arg Ser Phe Asp Ala Cys Val Lys Ala Tyr Gly Ile His
65                  70                  75                  80
Asn Asn Ser Ala Thr Ser Ala Leu Trp Gly Leu Phe Cys Asn Gly Ser
                85                  90                  95
Gln Pro Ser Ala Ala Cys Asp Glu Tyr Phe Ile Gln Asn Asn Val Thr
            100                 105                 110
Glu Ile Gln Gly Ile Pro Gly Ala Ala Ser Gly Val Phe Leu Glu Asn
        115                 120                 125         128
```

<210> 1901
<211> 68
<212> PRT
<213> Homo sapiens

<400> 1901

```
Met Glu Leu Leu Lys Leu Leu Leu Thr Cys Phe Ser Glu Ala Met Tyr
  1               5                  10                  15
Leu Pro Pro Ala Pro Glu Ser Gly Ser Thr Asn Pro Trp Val Gln Phe
            20                  25                  30
Phe Cys Ser Thr Glu Asn Arg His Ala Leu Pro Leu Phe Thr Ser Leu
```

```
         35                  40                  45
Leu Asn Thr Val Cys Ala Tyr Asp Pro Val Glu Tyr Gly Ile Pro Tyr
      50                  55                  60
Asn His Leu Tyr
 65          68
```

<210> 1902
<211> 127
<212> PRT
<213> Homo sapiens

<400> 1902

```
Met Tyr Phe Ser Ser Leu Phe Pro Tyr Val Val Leu Ala Cys Phe Leu
  1               5                  10                  15
Val Arg Gly Leu Leu Leu Arg Gly Ala Val Asp Gly Ile Leu His Met
             20                  25                  30
Phe Thr Pro Lys Leu Asp Lys Met Leu Asp Pro Gln Val Trp Arg Glu
         35                  40                  45
Ala Ala Thr Gln Val Phe Ser Ala Leu Gly Leu Gly Phe Gly Gly Val
      50                  55                  60
Ile Ala Phe Ser Ser Tyr Asn Lys Gln Asp Asn Asn Cys His Phe Asp
 65                  70                  75                  80
Ala Ala Leu Val Ser Phe Ile Asn Phe Phe Thr Ser Val Leu Ala Thr
                 85                  90                  95
Leu Val Val Phe Ala Val Leu Gly Phe Lys Ala Asn Ile Met Asn Glu
            100                 105                 110
Lys Cys Val Val Glu Asn Ala Glu Lys Ile Leu Gly Tyr Arg Val
        115                 120                 125     127
```

<210> 1903
<211> 83
<212> PRT
<213> Homo sapiens

<400> 1903

```
Met Trp Lys Phe Val Ser Pro Leu Cys Met Ala Val Leu Thr Thr Ala
  1               5                  10                  15
Ser Ile Ile Gln Leu Gly Val Thr Pro Pro Gly Tyr Ser Ala Trp Ile
             20                  25                  30
Lys Glu Glu Ala Ala Glu Arg Tyr Leu Tyr Phe Pro Asn Trp Ala Met
         35                  40                  45
Ala Pro Leu Ile Thr Leu Ile Val Val Ala Thr Leu Pro Ile Pro Val
      50                  55                  60
Val Phe Val Leu Arg His Phe His Leu Ile Cys Asp Gly Ser Asn Thr
 65                  70                  75                  80
Pro Cys Ile
          83
```

<210> 1904
<211> 129
<212> PRT

<213> Homo sapiens

<400> 1904

```
Met Lys Met Phe Val Ala His Gly Phe Tyr Ala Ala Lys Phe Val Val
  1               5                  10                  15
Ala Ile Gly Ser Val Ala Gly Leu Thr Val Ser Leu Leu Gly Ser Leu
             20                  25                  30
Phe Pro Met Pro Arg Val Ile Tyr Ala Met Ala Gly Asp Gly Leu Leu
         35                  40                  45
Phe Arg Phe Leu Ala His Val Ser Ser Tyr Thr Glu Thr Pro Val Val
     50                  55                  60
Ala Cys Ile Val Ser Gly Phe Leu Ala Ala Leu Leu Ala Leu Leu Val
 65                  70                  75                  80
Ser Leu Arg Asp Leu Ile Glu Met Met Ser Ile Gly Thr Leu Leu Ala
                 85                  90                  95
Tyr Thr Leu Val Ser Val Cys Val Leu Leu Leu Arg His His Pro Glu
            100                 105                 110
Ser Asp Ile Asp Gly Phe Val Lys Phe Leu Ser Glu Glu His Thr Cys
        115                 120                 125
Ser
129
```

<210> 1905
<211> 93
<212> PRT
<213> Homo sapiens

<400> 1905

```
Met Gly Leu Leu Met Met Ile Leu Gly Gln Ile Phe Leu Asn Gly Asn
  1               5                  10                  15
Gln Ala Lys Glu Ala Glu Ile Trp Glu Met Leu Trp Arg Met Gly Val
             20                  25                  30
Gln Arg Glu Arg Arg Leu Ser Ile Phe Gly Asn Pro Lys Arg Leu Leu
         35                  40                  45
Ser Val Glu Phe Val Trp Gln Arg Tyr Leu Asp Tyr Arg Pro Val Thr
     50                  55                  60
Asp Cys Lys Pro Val Glu Tyr Glu Phe Phe Trp Gly Pro Arg Ser His
 65                  70                  75                  80
Leu Glu Thr Thr Lys Met Lys Ile Leu Lys Phe Met Ala
                 85                  90          93
```

<210> 1906
<211> 66
<212> PRT
<213> Homo sapiens

<400> 1906

```
Met Thr Ile Gly Phe Leu Phe Pro Met Leu Ser Ile Ala Tyr Leu Ile
  1               5                  10                  15
Ser Pro Arg Ser Asn Leu Gly Leu Phe Ile Lys Lys Pro Phe Ile Lys
             20                  25                  30
Phe Ile Cys His Thr Ala Ser Tyr Leu Thr Phe Leu Ser Met Leu Leu
```

```
         35                  40                  45
Leu Ala Ser Gln His Ile Val Arg Thr Asp Leu His Val Gln Gly Pro
     50                  55                  60
Cys Ile
 65  66
```

<210> 1907
<211> 105
<212> PRT
<213> Homo sapiens

<400> 1907

```
Met Leu Gln Leu Gly Pro Phe Leu Tyr Trp Thr Phe Leu Ala Ala Phe
  1               5                  10                  15
Glu Gly Thr Val Phe Phe Phe Gly Thr Tyr Phe Leu Phe Gln Thr Ala
             20                  25                  30
Ser Leu Glu Glu Asn Gly Lys Val Tyr Gly Asn Trp Thr Phe Gly Thr
         35                  40                  45
Ile Val Phe Thr Val Leu Val Phe Thr Val Thr Leu Lys Leu Ala Leu
     50                  55                  60
Asp Thr Arg Phe Trp Thr Trp Ile Asn His Phe Val Ile Trp Gly Ser
 65                  70                  75                  80
Leu Ala Phe Tyr Val Phe Phe Ser Phe Phe Trp Gly Gly Ile Ile Trp
                 85                  90                  95
Pro Phe Leu Lys Gln Gln Arg Met Ala
            100                 105
```

<210> 1908
<211> 46
<212> PRT
<213> Homo sapiens

<400> 1908

```
Met Gly Phe Leu Val Leu Lys Gln Pro Met Leu Val Ala Lys Val Phe
  1               5                  10                  15
Pro Thr Leu Ala Gly Val Glu Ile Ile Leu Phe Thr Leu Lys Gly Phe
             20                  25                  30
Pro Ile Leu Gly Ile Pro Val Gln Leu Pro Pro Thr Val  *
         35                  40                  45
```

<210> 1909
<211> 139
<212> PRT
<213> Homo sapiens

<400> 1909

```
Met Ile Gln Ala Leu Gly Gly Phe Phe Thr Tyr Phe Val Ile Leu Ala
  1               5                  10                  15
Glu Asn Gly Phe Leu Pro Ile His Leu Leu Gly Leu Arg Glu Asp Trp
             20                  25                  30
```

```
Asp Asp Arg Trp Ile Asn Asp Val Glu Asp Ser Tyr Gly Gln Gln Trp
          35                  40                  45
Thr Tyr Glu Gln Arg Lys Ile Val Glu Phe Thr Cys His Thr Ala Phe
      50                  55                  60
Phe Val Ser Ile Val Gly Val Gln Trp Ala Asp Leu Val Ile Cys Lys
 65                  70                  75                  80
Thr Arg Arg Asn Ser Val Phe Gln Pro Gly Met Lys Asn Lys Ile Leu
                 85                  90                  95
Ile Phe Gly Leu Phe Glu Glu Thr Ala Leu Ala Ala Phe Leu Ser Tyr
            100                 105                 110
Cys Pro Gly Met Gly Val Ala Leu Lys Met Tyr Pro Leu Lys Pro Thr
        115                 120                 125
Trp Arg Val Cys Ala Phe Pro Tyr Ser Leu Leu
    130                 135                 139
```

<210> 1910
<211> 104
<212> PRT
<213> Homo sapiens

<400> 1910

```
Met Glu Gly Trp Phe Ala Val Leu Ser Thr Ala Asn Asp Val Leu Gly
  1               5                  10                  15
Ala Pro Trp Asn Trp Leu Tyr Phe Ile Pro Leu Leu Ile Ile Gly Ala
            20                  25                  30
Phe Phe Val Pro Thr Leu Val Leu Gly Val Leu Ser Gly Asp Phe Ala
        35                  40                  45
Lys Glu Arg Glu Arg Val Glu Thr Arg Arg Ala Phe Met Lys Leu Arg
    50                  55                  60
Arg Gln Gln Gln Ile Glu Arg Glu Leu Asn Gly Tyr Arg Val Trp Ile
 65                  70                  75                  80
Ala Lys Ala Glu Glu Val Met Leu Ala Glu Glu Asn Leu Tyr Pro Ser
                 85                  90                  95
His Ala Arg Pro Val Asn Pro  *
            100         103
```

<210> 1911
<211> 116
<212> PRT
<213> Homo sapiens

<400> 1911

```
Met Ala Val Ala Val Leu Leu Cys Gly Cys Ile Val Ala Thr Val Ser
  1               5                  10                  15
Phe Phe Trp Glu Glu Ser Leu Thr Gln His Val Ala Gly Leu Leu Phe
            20                  25                  30
Leu Met Thr Gly Ile Phe Cys Thr Ile Ser Leu Cys Thr Tyr Ala Ala
        35                  40                  45
Ser Ile Ser Tyr Asp Leu Asn Arg Leu Pro Lys Leu Ile Tyr Ser Leu
    50                  55                  60
Pro Ala Asp Val Glu His Gly Tyr Ser Trp Ser Ile Phe Cys Ala Trp
 65                  70                  75                  80
Cys Ser Leu Gly Phe Ile Val Ala Ala Gly Gly Leu Cys Ile Ala Tyr
```

```
                    85                  90                  95
Pro Phe Ile Ser Arg Thr Lys Ile Ala Gln Leu Lys Ser Gly Arg Asp
               100                 105                 110
Ser Thr Val  *
        115
```

<210> 1912
<211> 105
<212> PRT
<213> Homo sapiens

<400> 1912

```
Met Gln Leu Lys Thr Pro Ser Gly Gln Val Leu Ser Phe Cys Ile Leu
  1               5                  10                  15
Gln Leu Phe Pro Phe Thr Ser Glu Ser Lys Arg Met Gly Val Ile Val
             20                  25                  30
Arg Asp Glu Ser Thr Ala Glu Ile Thr Phe Tyr Met Lys Gly Ala Asp
         35                  40                  45
Val Ala Met Ser Pro Ile Val Gln Tyr Asn Asp Trp Leu Glu Glu Glu
     50                  55                  60
Cys Gly Asn Met Ala Arg Glu Gly Leu Arg Thr Leu Val Val Ala Lys
 65                  70                  75                  80
Lys Ala Leu Thr Glu Glu Gln Tyr Gln Asp Phe Glu Ser Arg Tyr Thr
                 85                  90                  95
Gln Ala Lys Leu Ser Met His Thr Lys
            100                 105
```

<210> 1913
<211> 141
<212> PRT
<213> Homo sapiens

<400> 1913

```
Met Leu Val Tyr Val Trp Ser Arg Arg Ser Pro Arg Val Arg Val Asn
  1               5                  10                  15
Phe Phe Gly Leu Leu Thr Phe Gln Ala Pro Phe Leu Pro Trp Ala Leu
             20                  25                  30
Met Gly Phe Ser Leu Leu Leu Gly Asn Ser Ile Leu Val Asp Leu Leu
         35                  40                  45
Gly Ile Ala Val Gly His Ile Tyr Tyr Phe Leu Glu Asp Val Phe Pro
     50                  55                  60
Asn Gln Pro Gly Arg Gln Glu Ala Pro Ala Asp Pro Trp Ala Phe Leu
 65                  70                  75                  80
Lys Leu Leu Leu Gly Cys Pro Cys Arg Arg Pro Gln Leu Thr Cys Pro
                 85                  90                  95
Ser Leu Arg Asn Ser Gln Asp Pro Ile Cys His Pro Arg Ser Ser Asp
            100                 105                 110
Pro His Pro Gly Ala Arg Pro Lys Arg Leu Leu Ala Ala Ser Ile Leu
        115                 120                 125
Pro Met Thr Pro Thr Trp Gly Arg Lys Asn Pro Ser  *
    130                 135                 140
```

<210> 1914
<211> 556
<212> PRT
<213> Homo sapiens

<400> 1914

```
Met Lys Lys Val Leu Leu Leu Leu Trp Lys Thr Val Leu Cys Thr Leu
  1               5                  10                  15
Gly Gly Phe Glu Glu Leu Gln Ser Met Lys Ala Glu Lys Arg Ser Ile
             20                  25                  30
Leu Gly Leu Pro Pro Leu Pro Glu Asp Ser Ile Lys Val Ile Arg Asn
         35                  40                  45
Met Arg Ala Ala Ser Pro Pro Ala Ser Ala Ser Asp Leu Ile Glu Gln
     50                  55                  60
Gln Gln Lys Arg Gly Arg Arg Glu His Lys Ala Leu Ile Lys Gln Asp
 65                  70                  75                  80
Asn Leu Asp Ala Phe Asn Glu Arg Asp Pro Tyr Lys Ala Asp Asp Ser
                 85                  90                  95
Arg Glu Glu Glu Glu Glu Asn Asp Asp Asp Asn Ser Leu Glu Gly Glu
            100                 105                 110
Thr Phe Pro Leu Glu Arg Asp Glu Val Met Pro Pro Pro Leu Gln His
        115                 120                 125
Pro Gln Thr Asp Arg Leu Thr Cys Pro Lys Gly Leu Pro Trp Ala Pro
    130                 135                 140
Lys Val Arg Glu Lys Asp Ile Glu Met Phe Leu Glu Ser Ser Arg Ser
145                 150                 155                 160
Lys Phe Ile Gly Tyr Thr Leu Gly Ser Asp Thr Asn Thr Val Val Gly
                165                 170                 175
Leu Pro Arg Pro Ile His Glu Ser Ile Lys Thr Leu Lys Gln His Lys
            180                 185                 190
Tyr Thr Ser Ile Ala Glu Val Gln Ala Gln Met Glu Glu Glu Tyr Leu
        195                 200                 205
Arg Ser Pro Leu Ser Gly Gly Glu Glu Glu Val Glu Gln Val Pro Ala
    210                 215                 220
Glu Thr Leu Tyr Gln Gly Leu Leu Pro Ser Leu Pro Gln Tyr Met Ile
225                 230                 235                 240
Ala Leu Leu Lys Ile Leu Leu Ala Ala Ala Pro Thr Ser Lys Ala Lys
                245                 250                 255
Thr Asp Ser Ile Asn Ile Leu Ala Asp Val Leu Pro Glu Glu Met Pro
            260                 265                 270
Thr Thr Val Leu Gln Ser Met Lys Leu Gly Val Asp Val Asn Arg His
        275                 280                 285
Lys Glu Val Ile Val Lys Ala Ile Ser Ala Val Leu Leu Leu Leu Leu
    290                 295                 300
Lys His Phe Lys Leu Asn His Val Tyr Gln Phe Glu Tyr Met Ala Gln
305                 310                 315                 320
His Leu Val Phe Ala Asn Cys Ile Pro Leu Ile Leu Lys Phe Phe Asn
                325                 330                 335
Gln Asn Ile Met Ser Tyr Ile Thr Ala Lys Asn Ser Ile Ser Val Leu
            340                 345                 350
Asp Tyr Pro His Cys Val Val His Glu Leu Pro Glu Leu Thr Ala Glu
        355                 360                 365
Ser Leu Glu Ala Gly Asp Ser Asn Gln Phe Cys Trp Arg Asn Leu Phe
    370                 375                 380
Ser Cys Ile Asn Leu Leu Arg Ile Leu Asn Lys Leu Thr Lys Trp Lys
385                 390                 395                 400
His Ser Arg Thr Met Met Leu Val Val Phe Lys Ser Ala Pro Ile Leu
```

```
                405                 410                 415
Lys Arg Ala Leu Lys Val Lys Gln Ala Met Met Gln Leu Tyr Val Leu
            420                 425                 430
Lys Leu Leu Lys Val Gln Thr Lys Tyr Leu Gly Arg Gln Trp Arg Lys
        435                 440                 445
Ser Asn Met Lys Thr Met Ser Ala Ile Tyr Gln Lys Val Arg His Arg
    450                 455                 460
Leu Asn Asp Asp Trp Ala Tyr Gly Asn Asp Leu Asp Ala Arg Pro Trp
465                 470                 475                 480
Asp Phe Gln Ala Glu Glu Cys Ala Leu Arg Ala Asn Ile Glu Arg Phe
                485                 490                 495
Asn Ala Arg Arg Tyr Asp Arg Ala His Ser Asn Pro Asp Phe Leu Pro
            500                 505                 510
Val Asp Asn Cys Leu Gln Ser Val Leu Gly Gln Arg Val Asp Leu Pro
        515                 520                 525
Glu Asp Phe Gln Met Asn Tyr Asp Leu Trp Leu Glu Arg Glu Val Phe
    530                 535                 540
Ser Lys Pro Ile Ser Trp Glu Glu Leu Leu Gln  *
545                 550                 555
```

<210> 1915
<211> 212
<212> PRT
<213> Homo sapiens

<400> 1915

```
Met Phe Leu Val Ala Val Trp Trp Arg Phe Gly Ile Leu Ser Ile Cys
  1               5                  10                  15
Met Leu Cys Val Gly Leu Val Leu Gly Phe Leu Ile Ser Ser Val Thr
             20                  25                  30
Phe Phe Thr Pro Leu Gly Asn Leu Lys Ile Phe His Asp Asp Gly Val
         35                  40                  45
Phe Trp Val Thr Phe Ser Cys Ile Ala Ile Leu Ile Pro Val Val Phe
     50                  55                  60
Met Gly Cys Leu Arg Ile Leu Asn Ile Leu Thr Cys Gly Val Ile Gly
 65                  70                  75                  80
Ser Tyr Ser Val Val Leu Ala Ile Asp Ser Tyr Trp Ser Thr Ser Leu
                 85                  90                  95
Ser Tyr Ile Thr Leu Asn Val Leu Lys Arg Ala Leu Asn Lys Asp Phe
            100                 105                 110
His Arg Ala Phe Thr Asn Val Pro Phe Gln Thr Asn Asp Phe Ile Ile
        115                 120                 125
Leu Ala Val Trp Gly Met Leu Ala Val Ser Gly Ile Thr Leu Gln Ile
    130                 135                 140
Arg Arg Glu Arg Gly Arg Pro Phe Phe Pro Pro His Pro Tyr Lys Leu
145                 150                 155                 160
Trp Lys Gln Glu Arg Glu Arg Arg Val Thr Asn Ile Leu Asp Pro Ser
                165                 170                 175
Tyr His Ile Pro Pro Leu Arg Glu Arg Leu Tyr Gly Arg Leu Thr Gln
            180                 185                 190
Ile Lys Gly Leu Phe Gln Lys Glu Gln Pro Ala Gly Glu Arg Thr Pro
        195                 200                 205
Leu Leu Leu  *
    210 211
```

<210> 1916
<211> 172
<212> PRT
<213> Homo sapiens

<400> 1916

```
Met Cys Thr Pro Val Arg Val Ser Ile Val Cys Val Met Gly Ala Val
  1               5                  10                  15
Gly Ala Val Trp Thr Ala Pro Leu Pro Leu Pro Trp Ala Pro Thr Pro
             20                  25                  30
Ser Ile His Leu Arg Glu Glu Gly Ala Ala Phe Pro Phe Cys Gly Val
         35                  40                  45
Cys Val Leu Arg Pro Arg Arg Ser Lys Trp Arg Ser Trp Asp Val Asn
     50                  55                  60
Leu Gly Pro Arg Arg Arg Gly Leu Leu Gly Cys Gly Pro Cys Pro Ser
 65                  70                  75                  80
Gly Lys Pro Arg Val His Leu Gln Arg Thr Arg Ser Gly Ala Gly Ala
                 85                  90                  95
Glu Ala Gly Gly Leu Pro Thr Arg Gly Ser Met Arg Gly Cys Pro Phe
            100                 105                 110
Leu Gly Ser Ser Ala Ala Lys Cys Ser Leu Leu Leu Arg Pro Pro Ser
        115                 120                 125
Arg Gly Glu Ala Ser Pro Trp Leu Pro Glu Phe Met Thr His Pro Val
    130                 135                 140
His His Gln Gln Leu Ala Cys Gly Ser Gly Trp Leu Gly Thr Lys His
145                 150                 155                 160
Pro Gly Gly Thr Cys Ala Leu Gly Ser Thr Met  *
                165                 170 171
```

<210> 1917
<211> 72
<212> PRT
<213> Homo sapiens

<400> 1917

```
Met Leu Arg Trp Gly Phe Leu Glu Ile Leu Phe Leu Arg Ser Trp Phe
  1               5                  10                  15
His Ser Trp Ile Cys Leu Leu Pro Thr Pro Gln Leu Pro Pro Asn Gly
             20                  25                  30
Ala Ser Ala Gly Ser Gln Asp Glu Gly Ser Arg Arg Arg Leu Ser Leu
         35                  40                  45
Glu Val Arg Gly Leu Met Asn His Val Pro Asn Leu Cys Val Ala Phe
     50                  55                  60
Leu Ser Ile Val Ser Ile Ser  *
 65                  70  71
```

<210> 1918
<211> 88
<212> PRT
<213> Homo sapiens

<400> 1918

```
Met Thr Ser Leu Met Phe Leu Trp Arg Ala Leu Leu Glu Thr Ile Ser
 1               5                  10                  15
Thr Asn Met Thr Phe Ser Leu Pro Leu Ala Ala Val Val Arg Ala Trp
            20                  25                  30
Met Lys Pro Thr Gly Ser Gly Met Phe Leu Tyr Gln Tyr Leu Pro Val
        35                  40                  45
Val Lys Ser Ser Gln Ala Val Phe Pro Val Val Ile Glu Ile Ser Ser
    50                  55                  60
Ile Ser Gly Ser Ile Leu Pro Lys Phe Pro Met Leu Ser Leu Met Ser
65                  70                  75                  80
Leu His Thr Gly Ser Ile Ile  *
                85      87
```

<210> 1919
<211> 54
<212> PRT
<213> Homo sapiens

<400> 1919

```
Met Leu Gly Pro Phe Ser Ser Leu Phe Leu Leu Leu Trp Ser Phe Thr
 1               5                  10                  15
Arg Phe Cys Ile His Phe Tyr Leu Ala Pro Ser His His Cys Leu Thr
            20                  25                  30
Ala Ala Leu Leu Pro Phe Ser Leu His Pro Leu Tyr Ser Ser Leu Ser
        35                  40                  45
Leu Ser Arg Ser Gln  *
    50          53
```

<210> 1920
<211> 114
<212> PRT
<213> Homo sapiens

<400> 1920

```
Met His Pro Pro Leu Thr Pro Pro Thr Pro Leu Cys Leu Trp Leu Arg
 1               5                  10                  15
Leu Leu Lys Ala Gln Ile Leu Ser Tyr Pro Val Pro Arg Phe Glu Thr
            20                  25                  30
His Ser Leu Ile Ser Arg Cys Ser Gln Val Pro Pro Thr Phe Leu Trp
        35                  40                  45
Asp Ile Lys Lys Gly Val Arg Gly Gln Arg Glu Pro Ser Gly Pro Leu
    50                  55                  60
Leu Pro Tyr Thr Leu His Cys Pro Phe Ser Pro His Gln Asn Ala Gln
65                  70                  75                  80
Arg Arg Cys Asp Asp Ala Thr Glu Asp Tyr Ala Thr Trp Ser Asn Arg
                85                  90                  95
Ser Gly Gln His Asp Gln Leu Ser Arg Gly Cys Leu Leu Pro Phe Leu
            100                 105                 110
Leu  *
113
```

<210> 1921
<211> 139
<212> PRT
<213> Homo sapiens

<400> 1921

```
Met Val Tyr Leu Tyr Ile Tyr Leu Asp Leu Phe Gln Phe Leu Ile Thr
  1               5                  10                  15
Val Leu Gln Gly Phe Leu Phe Val Phe Glu Met Glu Phe His Ser Cys
             20                  25                  30
Arg Pro Gly Gln Ser Ala Met Met Gln Ser Gln Leu Ala Ala Thr Ser
         35                  40                  45
Ala Ser Arg Val Gln Val Ile Leu Val Val Ser Ala Pro Gln Glu Ala
     50                  55                  60
Gly Thr Thr Gly Ala Arg His His Val Gln Leu Ile Phe Val Phe Leu
 65                  70                  75                  80
Leu Glu Met Gly Phe Cys His Val Gly Gln Ala Gly Leu Glu Leu Leu
                 85                  90                  95
Asn Ser Gly Asp Pro Pro Thr Ser Ala Ser Gln Ser Ala Gly Ile Arg
            100                 105                 110
Gly Val Asn His Cys Ala Pro Pro Ile Asn Ser Leu Leu Thr Phe Gln
        115                 120                 125
Ser Phe Ile His Leu Glu Cys Ile Val Ile  *
    130                 135         138
```

<210> 1922
<211> 52
<212> PRT
<213> Homo sapiens

<400> 1922

```
Met Trp Leu Ser Phe Pro Lys Leu Phe Ile Pro Leu Ser Ile Phe Leu
  1               5                  10                  15
Val Phe Leu Leu Met Ala Asn Ser Phe Arg Ile Phe Lys Ser Lys Asn
             20                  25                  30
Ile Phe Ile Ser Leu Leu Phe Trp Asn Asp Thr Phe Ala Gly Cys Ile
         35                  40                  45
Phe Leu Thr  *
     50  51
```

<210> 1923
<211> 71
<212> PRT
<213> Homo sapiens

<400> 1923

```
Met Val Ser His Cys Ile Phe Cys Asn Leu Leu Phe Ser Leu Leu Thr
  1               5                  10                  15
Val Phe Leu Arg Leu Leu His Val Asp Thr Cys His Leu Phe Ile Arg
             20                  25                  30
Phe Asn Cys Cys Lys Ile Phe Phe Cys Gln Asp Ile Leu Gln Leu Ile
```

```
          35                  40                  45
Tyr Leu Leu Phe Phe Leu Trp Thr Phe Lys Leu Phe Ser Gly Phe Thr
      50                  55                  60
Leu Lys Ile Ile Gln Gln  *
 65                  70
```

<210> 1924
<211> 187
<212> PRT
<213> Homo sapiens

<400> 1924

```
Met Leu Phe Ile Gln Tyr Leu Leu Pro Cys Leu Leu Leu Ser Ala Glu
  1               5                  10                  15
Leu Ser Gly Thr Phe Phe Leu Tyr Asn Thr Cys His Leu His Val Pro
             20                  25                  30
Cys Cys His Ser Leu Val Pro Thr Gly Pro Pro Ser Leu Ser Ser His
         35                  40                  45
Phe Gln Ser Arg Gly Leu Cys Ala Pro Cys Ala Ser Ile Ala Asp Ser
     50                  55                  60
Gly Ile Ala Asp Ser Gly Gly Asn Asn Leu Asn Phe Val Gly Ala Gly
 65                  70                  75                  80
Gly Val Ala Ser Gly His Leu Leu Ser Pro Leu Leu Gly Pro Gln Ser
                 85                  90                  95
Ser Pro Cys Pro His Cys Pro Arg Gly Gly Arg Leu Pro Ser Gln Pro
            100                 105                 110
Leu Pro Leu Cys Ser Ala Arg Ser Trp Ala Gln Glu Ala Leu Arg Leu
        115                 120                 125
Pro Ser Ser Ala Gln Leu Cys Pro Cys His Pro Leu Pro Arg Gly Leu
    130                 135                 140
Gly Pro Val Ser Pro Ser Gly Leu Leu Ala Asn Ile Ser Tyr Arg His
145                 150                 155                 160
Asn Trp Leu Leu Gly Ser Trp Pro Gly Trp Leu Ile Trp Gly Gly Lys
                165                 170                 175
Asn Arg Gly Gly Leu Asn Ser Phe Leu Ala  *
            180                 185 186
```

<210> 1925
<211> 50
<212> PRT
<213> Homo sapiens

<400> 1925

```
Met Leu Ser Phe Leu Val Val Phe Gln Leu Val Leu Leu Arg Phe Ser
  1               5                  10                  15
Gly Arg His Ser His His Gln Leu Ile Thr Ile Thr Phe Pro Leu Phe
             20                  25                  30
Gln Trp Leu Tyr Phe Phe Phe Phe Met Phe Phe Cys Thr Gly Trp Lys
         35                  40                  45
Phe  *
 49
```

<210> 1926
<211> 47
<212> PRT
<213> Homo sapiens

<400> 1926

```
Met Gly Arg Tyr Arg Cys Ala Ser Leu Leu Phe Cys Phe Leu Leu Leu
  1               5                  10                  15
Phe Phe Phe Phe Trp Leu Trp Val Arg Asp Ile Phe Lys Leu Ala Gln
             20                  25                  30
Lys Gly Arg Gly Trp Ser Leu Asp Pro His Val Ser Ile Thr  *
         35                  40                  45  46
```

<210> 1927
<211> 149
<212> PRT
<213> Homo sapiens

<400> 1927

```
Met Ala Thr Gly Leu Leu Ala Phe Leu Gly Leu Ala Ala Gly Gly Gln
  1               5                  10                  15
Thr Leu Cys Pro Ala Gly Glu Leu Pro Gly His Ala Arg Ala Gln Ala
             20                  25                  30
Ser Gly Ala Pro Gly Ser Val Leu Ile Ala Val Pro Gly Arg Arg Arg
         35                  40                  45
Val His Thr Cys Gly Pro Gly Pro Ala Ala Pro Ser Thr Arg Gly Glu
     50                  55                  60
Cys Pro Pro Pro Ala Leu Gly His Thr Arg Pro Ala Arg Pro Arg Pro
 65                  70                  75                  80
Val Leu Leu Arg Pro Ser Cys Ser Pro Gly Ala Arg Gly Ala Gly Thr
                 85                  90                  95
Trp Cys Cys Ala Pro Ala Thr Gly His Ser Ala Pro Arg Gly Cys Pro
            100                 105                 110
Pro Ala Arg Ala Ala Pro Thr Gly Ser Ala Thr Pro Ala Pro Pro Pro
        115                 120                 125
Ala Ala Cys Ala Ala Phe His Ser Ala Trp Ser Val Pro Pro Ala Gly
    130                 135                 140
Arg Gln Gln Gly  *
145         148
```

<210> 1928
<211> 446
<212> PRT
<213> Homo sapiens

<400> 1928

```
Met Ser Leu Trp Asn Gln Leu Val Val Pro Val Leu Phe Met Val Phe
  1               5                  10                  15
Trp Leu Val Leu Phe Ala Leu Gln Ile Tyr Ser Tyr Phe Ser Thr Arg
             20                  25                  30
Asp Gln Pro Ala Ser Arg Glu Arg Leu Leu Phe Leu Phe Leu Thr Ser
```

```
         35                  40                  45
Ile Ala Glu Cys Cys Ser Thr Pro Tyr Ser Leu Leu Gly Leu Val Phe
     50                  55                  60
Thr Val Ser Phe Val Ala Leu Gly Val Leu Thr Leu Cys Lys Phe Tyr
 65                  70                  75                  80
Leu Gln Gly Tyr Arg Ala Phe Met Asn Asp Pro Ala Met Asn Arg Gly
                 85                  90                  95
Met Thr Glu Gly Val Thr Leu Leu Ile Leu Ala Val Gln Thr Gly Leu
            100                 105                 110
Ile Glu Leu Gln Val Val His Arg Ala Phe Leu Leu Ser Ile Ile Leu
        115                 120                 125
Phe Ile Val Val Ala Ser Ile Leu Gln Ser Met Leu Glu Ile Ala Asp
    130                 135                 140
Pro Ile Val Leu Ala Leu Gly Ala Ser Arg Asp Lys Ser Leu Trp Lys
145                 150                 155                 160
His Phe Arg Ala Val Ser Leu Cys Leu Phe Leu Leu Val Phe Pro Ala
                165                 170                 175
Tyr Met Ala Tyr Met Ile Cys Gln Phe Phe His Met Asp Phe Trp Leu
            180                 185                 190
Leu Ile Ile Ile Ser Ser Ser Ile Leu Thr Ser Leu Gln Val Leu Gly
        195                 200                 205
Thr Leu Phe Ile Tyr Val Leu Phe Met Val Glu Glu Phe Arg Lys Glu
    210                 215                 220
Pro Val Glu Asn Met Asp Asp Val Ile Tyr Tyr Val Asn Gly Thr Tyr
225                 230                 235                 240
Arg Leu Leu Glu Phe Leu Val Ala Leu Cys Val Val Ala Tyr Gly Val
                245                 250                 255
Ser Glu Thr Ile Phe Gly Glu Trp Thr Val Met Gly Ser Met Ile Ile
            260                 265                 270
Phe Ile His Ser Tyr Tyr Asn Val Trp Leu Arg Ala Gln Leu Gly Trp
        275                 280                 285
Lys Ser Phe Leu Leu Arg Arg Asp Ala Val Asn Lys Ile Lys Ser Leu
    290                 295                 300
Pro Ile Ala Thr Lys Glu Gln Leu Glu Lys His Asn Asp Ile Cys Ala
305                 310                 315                 320
Ile Cys Tyr Gln Asp Met Lys Ser Ala Val Ile Thr Pro Cys Ser His
                325                 330                 335
Phe Phe His Ala Gly Cys Leu Lys Lys Trp Leu Tyr Val Gln Glu Thr
            340                 345                 350
Cys Pro Leu Cys His Cys His Leu Lys Asn Ser Ser Gln Leu Pro Gly
        355                 360                 365
Leu Gly Thr Glu Pro Val Leu Gln Pro His Ala Gly Ala Glu Gln Asn
    370                 375                 380
Val Met Phe Gln Glu Gly Thr Glu Pro Pro Gly Gln Glu His Thr Pro
385                 390                 395                 400
Gly Thr Arg Ile Gln Glu Gly Ser Arg Asp Asn Asn Glu Tyr Ile Ala
                405                 410                 415
Arg Arg Pro Asp Asn Gln Glu Gly Ala Phe Asp Pro Lys Glu Tyr Pro
            420                 425                 430
His Ser Ala Lys Asp Glu Ala His Pro Val Glu Ser Ala  *
        435                 440                 445
```

<210> 1929
<211> 120
<212> PRT
<213> Homo sapiens

<400> 1929

```
Met Val Leu Pro Leu Pro Trp Leu Ser Arg Tyr His Phe Leu Arg Leu
 1               5                  10                  15
Leu Leu Pro Ser Trp Ser Leu Ala Pro Gln Gly Ser His Gly Cys Cys
            20                  25                  30
Ser Gln Asn Pro Lys Ala Ser Met Glu Glu Gln Thr Asn Ser Arg Gly
        35                  40                  45
Asn Gly Lys Met Thr Ser Pro Pro Arg Gly Pro Gly Thr His Arg Thr
    50                  55                  60
Ala Glu Leu Ala Arg Ala Glu Glu Leu Leu Glu Gln Gln Leu Glu Leu
65                  70                  75                  80
Tyr Gln Ala Leu Leu Glu Gly Gln Glu Gly Ala Trp Glu Ala Gln Ala
                85                  90                  95
Leu Val Leu Lys Ile His Lys Leu Lys Glu Gln Met Arg Arg His Gln
            100                 105                 110
Glu Ser Leu Gly Gly Gly Ala  *
        115                 119
```

<210> 1930
<211> 122
<212> PRT
<213> Homo sapiens

<400> 1930

```
Met Thr Trp Leu Val Leu Leu Gly Thr Leu Leu Cys Met Leu Arg Val
 1               5                  10                  15
Gly Leu Gly Thr Pro Asp Ser Glu Gly Phe Pro Pro Arg Ala Leu His
            20                  25                  30
Asn Cys Pro Tyr Lys Cys Ile Cys Ala Ala Asp Leu Leu Ser Cys Thr
        35                  40                  45
Gly Leu Gly Leu Gln Asp Val Pro Ala Glu Leu Pro Ala Gly Thr Ala
    50                  55                  60
Asp Leu Asp Leu Ser His Asn Ala Leu Gln Arg Met Arg Pro Gly Trp
65                  70                  75                  80
Leu Ala Pro Leu Phe Gln Leu Arg Ala Leu His Leu Asp His Asn Glu
                85                  90                  95
Leu His Ala Leu Asp Arg Gly Val Phe Val Asn Ala Ser Gly Leu Arg
            100                 105                 110
Leu Leu Asp Leu Ser Ser Asn Ala Glu Phe
        115                 120     122
```

<210> 1931
<211> 73
<212> PRT
<213> Homo sapiens

<400> 1931

```
Met Ala Arg Ala Pro Ser Val Ala Leu Ala Gln Leu Trp Leu Ile Cys
 1               5                  10                  15
Leu Cys Pro Glu Ser Leu Ala Ser Phe Val Gln Ala Val Pro Trp Lys
            20                  25                  30
Val Leu Gln Pro Ser Ser Asn Arg Ser Thr Asp Cys Ser Pro His Met
```

```
         35                  40                  45
Arg Pro Thr Cys Glu Thr Leu Gly Ser Arg Lys Ala Gln Asp Leu Gly
      50                  55                  60
Ala Gly Tyr Tyr Val Ser Val His  *
 65                  70      72
```

<210> 1932
<211> 68
<212> PRT
<213> Homo sapiens

<400> 1932

```
Met Lys Thr Val Phe Thr Lys Lys Leu Thr Ala Ala Leu Leu Ile Thr
  1               5                  10                  15
Val Pro Asn Cys Lys Gln Pro Arg Cys Pro Ser Met Gly Glu Trp Leu
             20                  25                  30
Asn Lys Leu Gln Tyr Ile His Thr Met Lys Tyr Tyr Ser Thr Ile Lys
         35                  40                  45
Val Asn Tyr Trp Pro Gly Thr Val Ala His Thr Cys Asn Pro Ser Thr
     50                  55                  60
Leu Gly Gly  *
 65      67
```

<210> 1933
<211> 47
<212> PRT
<213> Homo sapiens

<400> 1933

```
Met Gln Gln Arg Lys Met Arg Leu Val Trp Arg Ser Tyr Trp Ser Met
  1               5                  10                  15
Val Gln Thr Pro Met Leu Trp Met Ala Thr Glu Ile Pro His Phe Thr
             20                  25                  30
Gly Gln Pro Leu Arg Thr Met Leu Ser Val Cys Gly Leu Ser  *
         35                  40                  45  46
```

<210> 1934
<211> 86
<212> PRT
<213> Homo sapiens

<400> 1934

```
Met Cys Trp Ser Pro Leu Thr Gly Trp Ala Leu Ser Ser Ser Arg Cys
  1               5                  10                  15
Arg Leu Ser Trp Pro Leu Thr Ser Phe Gly Ser Thr Ala Ser Cys Arg
             20                  25                  30
Pro Thr Thr Gly Trp Arg Gly Leu Met Trp Leu Gln Ala Leu Ser Ser
         35                  40                  45
Ser Gly Tyr Pro Ser Leu Cys Thr Leu Tyr Ser Glu Leu Leu Val Gln
     50                  55                  60
```

```
Ala Val His Arg Lys Ala Gly Asp Thr Glu Val Gln Gln Ser Leu Leu
 65                  70                  75                  80
Leu Leu Leu Lys Lys  *
                    85
```

<210> 1935
<211> 76
<212> PRT
<213> Homo sapiens

<400> 1935

```
Met Gly Glu Val Pro Lys Ala His Arg Leu Lys Leu Arg Trp Leu Phe
  1               5                  10                  15
Pro Val Ser Leu Cys Arg Ala Pro Leu Leu Ser Thr Ala His Leu Ala
             20                  25                  30
Leu Leu Leu Pro Cys Cys Leu Leu Cys Ser Ser Cys Tyr Tyr Phe Pro
         35                  40                  45
Phe Leu Ser Leu Leu Pro Pro Trp Pro Asn Leu Phe His Arg Asn Ile
     50                  55                  60
Thr Gly Pro Ala Arg His Ser Gly Ser Pro Leu  *
 65                  70                  75
```

<210> 1936
<211> 49
<212> PRT
<213> Homo sapiens

<400> 1936

```
Met Leu Leu Gln Thr Phe Val Thr Thr Cys Ile Ser Tyr Phe Tyr Trp
  1               5                  10                  15
His Phe Asn Phe Val Trp Ile Gln Phe Asn Val Cys Arg Val Leu Ser
             20                  25                  30
Phe Gln Pro Glu Arg Leu Thr Leu Ala Phe Leu Ile Gly Gln Val Tyr
         35                  40                  45           48
 *
```

<210> 1937
<211> 76
<212> PRT
<213> Homo sapiens

<400> 1937

```
Met Lys Gly Arg Phe Leu Phe Pro Leu Arg Leu Leu Leu Trp Met Cys
  1               5                  10                  15
Leu His Leu Gln Arg Gln Ala Ser Glu Leu His Gln Pro Ser Met Pro
             20                  25                  30
Gly Cys Pro Leu Thr Ser Ser Ser Arg Leu Phe Asp Asn Ala Gln Met
         35                  40                  45
His Gln Phe Leu Asn Ile His Val Lys Phe Glu Asn Cys Thr Phe Gly
```

```
     50                  55                  60
Glu Ile Lys Phe Tyr Ile Gln Leu Ala Lys Lys Lys
 65                  70                  75  76
```

<210> 1938
<211> 191
<212> PRT
<213> Homo sapiens

<400> 1938

```
Met Ala Asp Glu Lys Thr Phe Arg Ile Gly Phe Ile Val Leu Gly Leu
  1               5                  10                  15
Phe Leu Leu Ala Leu Gly Thr Phe Leu Met Ser His Asp Arg Pro Gln
             20                  25                  30
Val Tyr Gly Thr Phe Tyr Ala Met Gly Ser Val Met Val Ile Gly Gly
         35                  40                  45
Ile Ile Trp Ser Met Cys Gln Cys Tyr Pro Lys Ile Thr Phe Val Pro
     50                  55                  60
Ala Asp Ser Asp Phe Gln Gly Ile Leu Ser Pro Lys Ala Met Gly Leu
 65                  70                  75                  80
Leu Glu Asn Gly Leu Ala Ala Glu Met Lys Ser Pro Ser Pro Gln Pro
                 85                  90                  95
Pro Tyr Val Arg Leu Trp Glu Glu Ala Ala Tyr Asp Gln Ser Leu Pro
            100                 105                 110
Asp Phe Ser His Ile Gln Met Lys Val Met Ser Tyr Ser Glu Asp His
        115                 120                 125
Arg Ser Leu Leu Ala Pro Glu Met Gly Gln Pro Lys Leu Gly Thr Ser
    130                 135                 140
Asp Gly Gly Glu Gly Gly Pro Gly Asp Val Gln Ala Trp Met Glu Ala
145                 150                 155                 160
Ala Val Val Ile His Lys Gly Leu Asn Glu Ser Glu Gly Glu Arg Arg
                165                 170                 175
Leu Thr Gln Ser Trp Pro Gly Pro Leu Ala Cys Pro Gln Gly Pro
            180                 185                 190 191
```

<210> 1939
<211> 82
<212> PRT
<213> Homo sapiens

<400> 1939

```
Met Val Arg Ser Ile Arg Leu Leu Phe Phe Phe Gly Trp Gly Phe Ser
  1               5                  10                  15
Thr Thr Gln Gln Pro Ser Leu Cys Gln Asn Ser Leu Met Phe Pro Asp
             20                  25                  30
Gly Ser Ser Phe Thr Pro Leu Ser Glu Ala Pro Lys Gly Ser Phe Pro
         35                  40                  45
Gly Val Trp Thr Thr His Ser Ser Leu Ser Pro Asp Thr Pro Pro Pro
     50                  55                  60
Trp Val His Ser Ala Gly Trp Val Gln Thr Lys Trp Asn Pro Trp Asn
 65                  70                  75                  80
Leu  *
 81
```

<210> 1940
<211> 101
<212> PRT
<213> Homo sapiens

<400> 1940
Met His Val Cys Leu His Ile Trp Gly Leu Gly Val Cys Val Phe Met
1 5 10 15
His Met Met Cys Ala Cys Val Gly Val Tyr Val Cys Pro Phe Met Arg
20 25 30
Tyr Gly Met Gln Ile Cys Ala Cys Ile His Ala His Ser Cys Ser Ala
35 40 45
Cys Val Cys Ser Cys Ile Trp Cys Met His Gly Cys Ser Tyr Leu Trp
50 55 60
Gly Thr Gly Ile Met His Val Cys Ser Ser Val Trp Gly Val Gly Ile
65 70 75 80
Pro Gly Leu Trp Pro Glu Ala Pro Leu Gln Asp Thr Ala Pro Cys Arg
85 90 95
Leu Pro Arg Gly *
100

<210> 1941
<211> 88
<212> PRT
<213> Homo sapiens

<400> 1941
Met Lys Ala Ser Val Leu Ser Pro Ser Phe Leu Leu Val Leu Trp Ser
1 5 10 15
Cys Phe Leu Ser Cys Ser Cys Met Glu Pro Gln Ser Gly Phe Pro Arg
20 25 30
Pro Ser Cys Phe Thr Val Gly Phe Leu Leu Arg Arg Arg Thr Lys Thr
35 40 45
Arg Arg Gln Lys Ala Thr Asn Thr Val Lys Met Arg Thr Thr Lys Ile
50 55 60
Leu Lys Ile Lys Ile Asp Lys Arg Arg Trp Pro Thr Arg Met Ser Ser
65 70 75 80
Lys Trp Asn Pro Lys Glu Trp *
85 87

<210> 1942
<211> 46
<212> PRT
<213> Homo sapiens

<400> 1942
Met Arg Ser Met Gly Phe Arg Ala Gln Gly Leu Pro Phe Gly Ile Arg
1 5 10 15
Gln Thr Trp Leu Arg Ile Leu Asp Leu Leu Leu Thr Cys Thr Leu Pro

```
            20                  25                  30
Phe Gly Ser Arg Asp Val Lys Trp Arg Cys Cys His Leu  *
        35                  40                  45
```

<210> 1943
<211> 155
<212> PRT
<213> Homo sapiens

<400> 1943

```
Met Phe Thr Leu Leu Val Leu Leu Ser Gln Leu Pro Thr Val Thr Leu
  1               5                  10                  15
Gly Phe Pro His Cys Ala Arg Gly Pro Lys Ala Ser Lys His Ala Gly
            20                  25                  30
Glu Glu Val Phe Thr Ser Lys Glu Glu Ala Asn Phe Phe Ile His Arg
        35                  40                  45
Arg Leu Leu Tyr Asn Arg Phe Asp Leu Glu Leu Phe Thr Pro Gly Asn
    50                  55                  60
Leu Glu Arg Glu Cys Asn Glu Glu Leu Cys Asn Tyr Glu Glu Ala Arg
65                  70                  75                  80
Glu Ile Phe Val Asp Glu Asp Lys Thr Ile Ala Phe Trp Gln Glu Tyr
                85                  90                  95
Ser Ala Lys Gly Pro Thr Thr Lys Ser Asp Gly Asn Arg Glu Lys Ile
            100                 105                 110
Asp Val Met Gly Leu Leu Thr Gly Leu Ile Ala Ala Gly Val Phe Leu
        115                 120                 125
Val Ile Phe Gly Leu Leu Gly Tyr Tyr Leu Cys Ile Thr Lys Cys Asn
    130                 135                 140
Arg Leu Gln His Pro Cys Ser Ser Ala Val Tyr
145                 150                 155
```

<210> 1944
<211> 61
<212> PRT
<213> Homo sapiens

<400> 1944

```
Met Cys Gln His Val Gln Leu Ile Phe Val Phe Phe Val Glu Thr Gly
  1               5                  10                  15
Phe His His Val Ala Gln Ala Gly Leu Lys Leu Leu Gly Ser Ser Asp
            20                  25                  30
Leu Pro Thr Ser Ala Ser Gln Ser Ala Gly Ile Lys Gly Ile Ser His
        35                  40                  45
His Val Gln Leu Lys Phe Leu Ile Ile Asn Asn Phe *
    50                  55                  60
```

<210> 1945
<211> 79
<212> PRT
<213> Homo sapiens

<400> 1945

```
Met Gln Leu Ile Leu Trp Leu Pro Trp Tyr Val Asp Gln Thr Phe Cys
 1               5                  10                  15
His Ser Val Leu Gln Cys Cys Cys Pro Gly Gln Leu Cys Gln Ser Phe
            20                  25                  30
His Ser Asn Arg Asn Asp Ala Arg Leu Leu Gly Ala Lys Gln Ser Ile
        35                  40                  45
Met Arg Arg Lys Arg Trp Leu Glu Pro Ser Val Arg Glu Cys Ala Pro
    50                  55                  60
Gly Met Ile Leu Tyr Lys Ile Gln Ser Tyr Leu Lys Ile Gln  *
65                  70                  75          78
```

<210> 1946
<211> 72
<212> PRT
<213> Homo sapiens

<400> 1946

```
Met Leu Arg Trp Gly Phe Leu Glu Ile Leu Phe Leu Arg Ser Trp Phe
 1               5                  10                  15
His Ser Trp Ile Cys Leu Leu Pro Thr Pro Gln Leu Pro Pro Asn Gly
            20                  25                  30
Ala Ser Ala Gly Ser Gln Asp Glu Gly Ser Arg Arg Arg Leu Ser Leu
        35                  40                  45
Glu Val Arg Gly Leu Met Asn His Val Pro Asn Leu Cys Val Ala Phe
    50                  55                  60
Leu Ser Ile Val Ser Ile Ser  *
65                  70  71
```

<210> 1947
<211> 56
<212> PRT
<213> Homo sapiens

<400> 1947

```
Met Trp Asn Val Ala Phe Leu Phe Gln Trp Phe Leu Ser Leu Lys Lys
 1               5                  10                  15
Glu Gly Arg Ser Ser Val Glu Thr Lys Asp Arg Arg Ser Val Arg Asp
            20                  25                  30
Leu Trp Gly Met Pro Lys Lys Met Val Ser Phe Gly Gly Glu Trp Leu
        35                  40                  45
Arg Glu Gly Leu Arg Glu Val  *
    50                  55
```

<210> 1948
<211> 48
<212> PRT
<213> Homo sapiens

<400> 1948

```
Met Ser Leu Leu Leu Pro Pro Leu Ala Leu Leu Leu Leu Leu Ala Ala
  1               5                  10                  15
Leu Val Ala Pro Ala Thr Ala Ala Thr Ala Tyr Arg Pro Asp Trp Asn
             20                  25                  30
Arg Leu Ser Gly Leu Thr Arg Ala Arg Val Glu Thr Cys Gly Gly  *
         35                  40                  45      47
```

<210> 1949
<211> 136
<212> PRT
<213> Homo sapiens

<400> 1949

```
Met Leu Leu Ala Thr Leu Leu Leu Leu Leu Leu Gly Gly Ala Leu Ala
  1               5                  10                  15
His Pro Asp Arg Ile Ile Phe Pro Asn His Ala Cys Glu Asp Pro Pro
             20                  25                  30
Ala Val Leu Leu Glu Val Gln Gly Thr Leu Gln Arg Pro Leu Val Arg
         35                  40                  45
Asp Ser Arg Thr Ser Pro Ala Asn Cys Thr Trp Leu Ile Leu Gly Ser
     50                  55                  60
Lys Glu Gln Thr Val Thr Ile Arg Phe Gln Lys Leu His Leu Ala Cys
 65                  70                  75                  80
Gly Ser Glu Arg Leu Thr Leu Arg Ser Pro Leu Gln Pro Leu Ile Ser
                 85                  90                  95
Leu Cys Glu Ala Pro Pro Ser Pro Leu Gln Leu Pro Gly Gly Asn Val
            100                 105                 110
Thr Ile Thr Tyr Ser Tyr Ala Gly Ala Lys Arg Pro Gln Gly His Gly
        115                 120                 125
Phe Phe Cys Phe Leu Lys Ala Lys
    130                 135 136
```

<210> 1950
<211> 78
<212> PRT
<213> Homo sapiens

<400> 1950

```
Met Trp Ile Tyr Phe Trp Thr Leu Asn Ser Val Pro Val Ile Tyr Met
  1               5                  10                  15
Ser Thr Leu Met Ser Ile Pro His Tyr Phe Asp Tyr Cys Cys Phe Ile
             20                  25                  30
Val Ser Asp Ile Met Leu Pro Glu Ile Thr Phe Ser Thr Phe Ile Leu
         35                  40                  45
Leu Leu Met Val Ala Leu Ala Ile Arg Gly Pro Leu His Phe Arg Arg
     50                  55                  60
His Phe Arg Ile Asn Leu Ser Ile Ala Thr Lys Asn Ala  *
 65                  70                  75      77
```

<210> 1951

<211> 89
<212> PRT
<213> Homo sapiens

<400> 1951

```
Met Val Cys Gly Ala Leu Met Trp Ile Met Leu Ile Leu Val Gly Leu
  1               5                  10                  15
Gly Phe Pro Phe Ile Met Glu Ala Leu Ser His Phe Leu Tyr Val Pro
             20                  25                  30
Phe Leu Gly Val Cys Val Cys Gly Ala Ile Tyr Thr Gly Leu Phe Leu
         35                  40                  45
Pro Glu Thr Lys Gly Lys Thr Phe Gln Glu Ile Ser Lys Glu Leu His
     50                  55                  60
Arg Leu Asn Phe Pro Arg Arg Ala Gln Gly Pro Thr Trp Arg Ser Leu
 65                  70                  75                  80
Glu Val Ile Gln Ser Thr Glu Leu  *
                 85          88
```

<210> 1952
<211> 47
<212> PRT
<213> Homo sapiens

<400> 1952

```
Met Thr Thr Ala Leu Ser Phe Met Val Ile Thr Val Leu Trp Val Leu
  1               5                  10                  15
Leu Leu His Leu Leu Ala Asn Ile Cys Ile Pro Arg Lys Cys Ser Phe
             20                  25                  30
Val Cys Phe Tyr Ile Asn Gly Ile Leu Leu His Ala Val Phe  *
         35                  40                  45  46
```

<210> 1953
<211> 56
<212> PRT
<213> Homo sapiens

<400> 1953

```
Met Lys Asn Leu Arg Leu Gly Glu Val Val Thr Leu Ser Trp Val Leu
  1               5                  10                  15
Val Val Glu Leu Glu Val Lys Ala Lys Ser Val Phe Leu Leu Ala Ile
             20                  25                  30
Leu Thr Thr Glu Phe Ser Leu Asn Gln Ser Leu Lys Met Phe Leu Gly
         35                  40                  45
Gln Glu Trp Trp Phe Thr Leu  *
     50                  55
```

<210> 1954
<211> 425
<212> PRT
<213> Homo sapiens

<400> 1954

```
Met Thr Leu Arg Pro Gly Thr Met Arg Leu Ala Cys Met Phe Ser Ser
 1               5                  10                  15
Ile Leu Leu Phe Gly Ala Ala Gly Leu Leu Leu Phe Ile Ser Leu Gln
            20                  25                  30
Asp Pro Thr Glu Leu Ala Pro Gln Gln Val Pro Gly Ile Lys Phe Asn
        35                  40                  45
Ile Arg Pro Arg Gln Pro His His Asp Leu Pro Pro Gly Gly Ser Gln
    50                  55                  60
Asp Gly Asp Leu Lys Glu Pro Thr Glu Arg Val Thr Arg Asp Leu Ser
65                  70                  75                  80
Ser Gly Ala Pro Arg Gly Arg Asn Leu Pro Ala Pro Asp Gln Pro Gln
                85                  90                  95
Pro Pro Leu Gln Arg Gly Thr Arg Leu Arg Leu Arg Gln Arg Arg Arg
            100                 105                 110
Arg Leu Leu Ile Lys Lys Met Pro Ala Ala Ala Thr Ile Pro Ala Asn
        115                 120                 125
Ser Ser Asp Ala Pro Phe Ile Arg Pro Gly Pro Gly Thr Leu Asp Gly
    130                 135                 140
Arg Trp Val Ser Leu His Arg Ser Gln Gln Glu Arg Lys Arg Val Met
145                 150                 155                 160
Gln Glu Ala Cys Ala Lys Tyr Arg Ala Ser Ser Ser Arg Arg Ala Val
                165                 170                 175
Thr Pro Arg His Val Ser Arg Ile Phe Val Glu Asp Arg His Arg Val
            180                 185                 190
Leu Tyr Cys Glu Val Pro Lys Ala Gly Cys Ser Asn Trp Lys Arg Val
        195                 200                 205
Leu Met Val Leu Ala Gly Leu Ala Ser Ser Thr Ala Asp Ile Gln His
    210                 215                 220
Asn Thr Val His Tyr Gly Ser Ala Leu Lys Arg Leu Asp Thr Phe Asp
225                 230                 235                 240
Arg Gln Gly Ile Leu His Arg Leu Ser Thr Tyr Thr Lys Met Leu Phe
                245                 250                 255
Val Arg Glu Pro Phe Glu Arg Leu Val Ser Ala Phe Arg Asp Lys Phe
            260                 265                 270
Glu His Pro Asn Ser Tyr Tyr His Pro Val Phe Gly Lys Ala Ile Leu
        275                 280                 285
Ala Arg Tyr Arg Ala Asn Ala Ser Arg Glu Ala Leu Arg Thr Gly Ser
    290                 295                 300
Gly Val Arg Phe Pro Glu Phe Val Gln Tyr Leu Leu Asp Val His Arg
305                 310                 315                 320
Pro Val Gly Met Asp Ile His Trp Asp His Val Ser Arg Leu Cys Ser
                325                 330                 335
Pro Cys Leu Ile Asp Tyr Asp Phe Val Gly Lys Phe Glu Ser Met Glu
            340                 345                 350
Asp Asp Ala Asn Phe Phe Leu Ser Leu Ile Arg Ala Pro Arg Asn Leu
        355                 360                 365
Thr Phe Pro Arg Phe Lys Asp Arg His Ser Gln Glu Ala Arg Thr Thr
    370                 375                 380
Ala Arg Ile Ala His Gln Tyr Phe Ala Gln Leu Ser Ala Leu Gln Arg
385                 390                 395                 400
Gln Arg Thr Tyr Asp Phe Tyr Tyr Met Asp Tyr Leu Met Phe Asn Tyr
                405                 410                 415
Ser Lys Pro Phe Ala Asp Leu Tyr  *
            420                 424
```

<210> 1955
<211> 106
<212> PRT
<213> Homo sapiens

<400> 1955

```
Met Val Cys Phe Leu Phe Ile Thr Pro Leu Ala Ala Ile Ser Gly Trp
  1               5                  10                  15
Leu Cys Leu Arg Gly Ala Gln Asp His Leu Arg Leu His Ser Gln Leu
             20                  25                  30
Glu Ala Val Gly Leu Ile Ala Leu Thr Ile Ala Leu Phe Thr Ile Tyr
         35                  40                  45
Val Leu Trp Thr Leu Val Ser Phe Arg Tyr His Cys Gln Leu Tyr Ser
     50                  55                  60
Glu Trp Arg Lys Thr Asn Gln Lys Val Arg Leu Lys Ile Arg Glu Ala
 65                  70                  75                  80
Asp Ser Pro Glu Gly Pro Gln His Ser Pro Leu Ala Ala Gly Leu Leu
                 85                  90                  95
Lys Lys Val Ala Glu Glu Thr Pro Val  *
            100                 105
```

<210> 1956
<211> 139
<212> PRT
<213> Homo sapiens

<400> 1956

```
Met Val Leu Pro Phe Ile Cys Asn Leu Leu Arg Arg His Pro Ala Cys
  1               5                  10                  15
Arg Val Leu Val His Arg Pro His Gly Pro Glu Leu Asp Ala Asp Pro
             20                  25                  30
Tyr Asp Pro Gly Glu Glu Asp Pro Ala Gln Ser Arg Ala Leu Glu Ser
         35                  40                  45
Ser Leu Trp Glu Leu Gln Ala Leu Gln Arg His Tyr His Pro Glu Val
     50                  55                  60
Ser Lys Ala Ala Ser Val Ile Asn Gln Ala Leu Ser Met Pro Glu Val
 65                  70                  75                  80
Ser Ile Ala Pro Leu Leu Glu Leu Thr Ala Tyr Glu Ile Phe Glu Arg
                 85                  90                  95
Asp Leu Lys Lys Lys Gly Pro Glu Pro Val Pro Thr Gly Val Leu Ser
            100                 105                 110
Gln Pro Arg Ala Cys Trp Asp Gly Arg Val Lys Leu Cys Ala Gln His
        115                 120                 125
Phe His Ala Gln Leu Thr Leu Ala His Leu  *
    130                 135         138
```

<210> 1957
<211> 87
<212> PRT
<213> Homo sapiens

<400> 1957

```
Met Ala Ala Pro Trp Arg Arg Trp Pro Thr Gly Leu Leu Ala Val Leu
 1               5                  10                  15
Arg Pro Leu Leu Thr Cys Arg Pro Leu Gln Gly Thr Thr Leu Gln Arg
            20                  25                  30
Asp Gly Leu Leu Phe Glu His Asp Arg Gly Arg Phe Phe Thr Ile Leu
        35                  40                  45
Gly Leu Val Cys Ala Gly Gln Gly Gly Phe Trp Ala Ser Met Ala Gly
    50                  55                  60
Ala Gly Ala Leu Arg Thr Pro Gly Pro Leu Gln Gly Met Asn Val Glu
65                  70                  75                  80
Arg His Glu Leu Leu Phe  *
                85  86
```

<210> 1958
<211> 48
<212> PRT
<213> Homo sapiens

<400> 1958

```
Met Thr Tyr Phe Ser Gly Leu Leu Val Ile Leu Ala Phe Ala Ala Trp
 1               5                  10                  15
Val Ala Leu Ala Glu Gly Leu Gly Val Ala Glu Tyr Ala Pro Ala Ala
            20                  25                  30
Leu Pro Cys Ala Ala Cys Ala Thr Ile Leu Leu Ser Ser Val Ala  *
        35                  40                  45      47
```

<210> 1959
<211> 65
<212> PRT
<213> Homo sapiens

<400> 1959

```
Met Trp Ser Leu Ile Gln Thr Leu Gln Ile Leu Pro Gly Ser Leu Ser
 1               5                  10                  15
Ile Leu Leu Cys Ser Ser Ala Gly Trp Lys Asp Cys Gln Ser Ala Leu
            20                  25                  30
Trp Leu Asn His Val Phe Arg Arg Ala Trp Trp Leu Leu Pro Val Ile
        35                  40                  45
Leu Ala Leu Trp Glu Ala Glu Ala Gly Gly Ser Pro Glu Val Arg Ser
    50                  55                  60              64
*
```

<210> 1960
<211> 78
<212> PRT
<213> Homo sapiens

<400> 1960

```
Met Ser Tyr Val Arg His Val Leu Ser Cys Leu Gly Gly Gly Leu Ala
 1               5                  10                  15
Leu Trp Arg Ala Gly Gln Trp Leu Trp Ala Gln Arg Leu Gly His Cys
            20                  25                  30
His Thr Tyr Trp Ala Val Ser Glu Glu Leu Leu Pro Asn Ser Gly His
        35                  40                  45
Gly Pro Asp Gly Glu Val Pro Lys Asp Lys Glu Gly Gly Val Phe Asp
    50                  55                  60
Leu Gly Pro Phe Ile Val Gly Phe Trp Gly Pro Gln Ile  *
65                  70                  75      77
```

<210> 1961
<211> 77
<212> PRT
<213> Homo sapiens

<400> 1961

```
Met Trp Tyr Gly Val Phe Leu Trp Ala Leu Val Ser Ser Leu Phe Phe
 1               5                  10                  15
His Val Pro Ala Gly Leu Leu Ala Leu Phe Thr Leu Arg His His Lys
            20                  25                  30
Tyr Gly Ala Ala Ile Ala Gly Val Tyr Arg Ala Ala Gly Lys Glu Met
        35                  40                  45
Ile Pro Phe Glu Ala Leu Thr Leu Gly Thr Gly Gln Thr Phe Cys Val
    50                  55                  60
Leu Val Val Ser Phe Leu Arg Ile Leu Ala Thr Leu  *
65                  70                  75  76
```

<210> 1962
<211> 65
<212> PRT
<213> Homo sapiens

<400> 1962

```
Met Phe Ser Ala Val Phe Pro Ala Val Ser Cys Gln Ile Ser Leu Leu
 1               5                  10                  15
Ser Thr Cys Asn Ser Leu Gln His Phe Pro Tyr Ala Gly Val Leu Cys
            20                  25                  30
Phe Arg Pro Val Leu Cys Leu Cys Pro Gly Gln Asp Phe Cys Gly Asn
        35                  40                  45
Val Arg Cys Gln Trp Arg Leu Leu Ala Gly Val Asp Val Ser Asp Val
    50                  55                  60                  64
*
```

<210> 1963
<211> 53
<212> PRT
<213> Homo sapiens

<221> misc_feature

<222> (1)...(53)
<223> Xaa = any amino acid or nothing

<400> 1963

```
Met Thr Cys Pro Leu His Thr Thr Pro Phe Pro Phe Ser Leu Pro Cys
  1               5                  10                  15
Leu Pro Thr Phe Phe Leu Asp Phe Pro Ser Cys Ser Leu Ser Ser Cys
            20                  25                  30
Leu Pro Ile Cys Phe Pro Phe Leu Ser Leu Xaa Gln Ile Leu His Ile
        35                  40                  45
Val Ala Leu Leu Ile
    50              53
```

<210> 1964
<211> 232
<212> PRT
<213> Homo sapiens

<400> 1964

```
Met Pro Ser Val His Arg Leu Leu Gly Pro Gln Pro Val Pro Ser Arg
  1               5                  10                  15
Arg Leu Arg Leu Ala Leu Ala Leu Leu Leu Ser Leu Gln Val Val Val
            20                  25                  30
Phe Phe Leu Val Val Leu Gly Gln Gly Arg Leu Leu Gln Pro Cys Arg
        35                  40                  45
Gly Cys Leu Glu Leu Pro Gly Gly Pro Gly Glu Ala Glu Asp His Gly
    50                  55                  60
Asp Leu Gly Gln Gly Trp Val Gly Leu Leu Gln Ala Leu Asp Pro Leu
65                  70                  75                  80
Ser His Arg Arg Leu Val Met Ser Thr Arg His Ala His Gly Glu Asp
                85                  90                  95
Arg Ala Phe Leu His Phe Ile Asp Val Lys Leu Val Val Val Pro Ala
            100                 105                 110
Thr Pro His Ile Leu Gln Val Gln Leu His Arg Val Val Glu Val Pro
        115                 120                 125
Leu Leu Arg Arg Leu Phe His Phe Pro Leu Leu Arg Gly Gln Gln Val
    130                 135                 140
Ser Ser Glu Asp Val Val Ile His Thr Leu Val Ala Glu Pro Gln Gly
145                 150                 155                 160
Glu Gly Ala Leu Asn Lys Asp Arg Pro Gly Trp Ile Val Ala Gly Gln
                165                 170                 175
Gly Gly Leu Leu Ile Gly Thr Leu Asp Ser Trp Cys Gly Asp Ile His
            180                 185                 190
Ala Leu Cys Pro Thr Met Trp Gly Trp Gly Gly Ser Ala Ala Pro Val
        195                 200                 205
Glu Ser Leu Gly Lys Gly Thr Ser Gly Glu Gly Asp Gly Arg Arg Gln
    210                 215                 220
Gly Gln Arg Thr Gly Pro Gly  *
225                 230 231
```

<210> 1965
<211> 253
<212> PRT

<213> Homo sapiens

<400> 1965

```
Met Gly Cys Ala Ile Ile Ala Gly Phe Leu His Tyr Leu Phe Leu Ala
  1               5                  10                  15
Cys Phe Phe Trp Met Leu Val Glu Ala Val Ile Leu Phe Leu Met Val
             20                  25                  30
Arg Asn Leu Lys Val Val Asn Tyr Phe Ser Ser Arg Asn Ile Lys Met
         35                  40                  45
Leu His Ile Cys Ala Phe Gly Tyr Gly Leu Pro Met Leu Val Val Val
     50                  55                  60
Ile Ser Ala Ser Val Gln Pro Gln Gly Tyr Gly Met His Asn Arg Cys
 65                  70                  75                  80
Trp Leu Asn Thr Glu Thr Gly Phe Ile Trp Ser Phe Leu Gly Pro Val
                 85                  90                  95
Cys Thr Val Ile Val Ile Asn Ser Leu Leu Leu Thr Trp Thr Leu Trp
            100                 105                 110
Ile Leu Arg Gln Arg Leu Ser Ser Val Asn Ala Glu Val Ser Thr Leu
        115                 120                 125
Lys Asp Thr Arg Leu Leu Thr Phe Lys Ala Phe Ala Gln Leu Phe Ile
    130                 135                 140
Leu Gly Cys Ser Trp Val Leu Gly Ile Phe Gln Ile Gly Pro Val Ala
145                 150                 155                 160
Gly Val Met Ala Tyr Leu Phe His His His Gln Gln Pro Ala Gly Gly
                165                 170                 175
Leu His Leu Pro His Pro Leu Ser Ala Gln Arg Pro Gly Thr Arg Arg
            180                 185                 190
Ile Gln Glu Val Asp His Trp Glu Asp Glu Ala Gln Leu Pro Val Pro
        195                 200                 205
Asp Leu Lys Asp Leu Ala Val Leu His Ala Ile Arg Phe Gln Asp Gly
    210                 215                 220
Leu Lys Ser Phe Leu Ala Phe Lys Tyr Ala Met Glu Pro Thr Val Gly
225                 230                 235                 240
Gly Thr Ser Ser Phe Pro Cys Arg Glu Pro Tyr Pro  *
                245                 250     252
```

<210> 1966
<211> 649
<212> PRT
<213> Homo sapiens

<400> 1966

```
Met Val Thr Cys Phe Ile Ile Gly Leu Leu Phe Pro Val Phe Ser Val
  1               5                  10                  15
Cys Tyr Leu Ile Ala Pro Lys Ser Pro Leu Gly Leu Phe Ile Arg Lys
             20                  25                  30
Pro Phe Ile Lys Phe Ile Cys His Thr Ala Ser Tyr Leu Thr Phe Leu
         35                  40                  45
Phe Leu Leu Leu Leu Ala Ser Gln His Ile Asp Arg Ser Asp Leu Asn
     50                  55                  60
Arg Gln Gly Pro Pro Pro Thr Ile Val Glu Trp Met Ile Leu Pro Trp
 65                  70                  75                  80
Val Leu Gly Phe Ile Trp Gly Glu Ile Lys Gln Met Trp Asp Gly Gly
                 85                  90                  95
Leu Gln Asp Tyr Ile His Asp Trp Trp Asn Leu Met Asp Phe Val Met
```

```
                100                 105                 110
Asn Ser Leu Tyr Leu Ala Thr Ile Ser Leu Lys Ile Val Ala Phe Val
            115                 120                 125
Lys Tyr Ser Ala Leu Asn Pro Arg Glu Ser Trp Asp Met Trp His Pro
    130                 135                 140
Thr Leu Val Ala Glu Ala Leu Phe Ala Ile Ala Asn Ile Phe Ser Ser
145                 150                 155                 160
Leu Arg Leu Ile Ser Leu Phe Thr Ala Asn Ser His Leu Gly Pro Leu
                165                 170                 175
Gln Ile Ser Leu Gly Arg Met Leu Leu Asp Ile Leu Lys Phe Leu Phe
            180                 185                 190
Ile Tyr Cys Leu Val Leu Leu Ala Phe Ala Asn Gly Leu Asn Gln Leu
        195                 200                 205
Tyr Phe Tyr Tyr Glu Glu Thr Lys Gly Leu Thr Cys Lys Gly Ile Arg
    210                 215                 220
Cys Glu Lys Gln Asn Asn Ala Phe Ser Thr Leu Phe Glu Thr Leu Gln
225                 230                 235                 240
Ser Leu Phe Trp Ser Ile Phe Gly Leu Ile Asn Leu Tyr Val Thr Asn
                245                 250                 255
Val Lys Ala Gln His Glu Phe Thr Glu Phe Val Gly Ala Thr Met Phe
            260                 265                 270
Gly Thr Tyr Asn Asp Ile Ser Leu Val Val Leu Leu Asn Met Leu Ile
        275                 280                 285
Ala Met Met Asn Asn Ser Tyr Gln Leu Ile Ala Asp His Ala Asp Ile
    290                 295                 300
Glu Trp Lys Phe Ala Arg Thr Lys Leu Trp Met Ser Tyr Phe Glu Glu
305                 310                 315                 320
Gly Gly Thr Leu Pro Thr Pro Phe Asn Val Ile Pro Ser Pro Lys Ser
                325                 330                 335
Leu Trp Tyr Leu Ile Lys Trp Ile Trp Thr His Leu Cys Lys Lys Lys
            340                 345                 350
Met Arg Arg Lys Pro Glu Ser Phe Gly Thr Ile Gly Arg Arg Ala Ala
        355                 360                 365
Asp Asn Leu Arg Arg His His Gln Tyr Gln Glu Val Met Arg Asn Leu
    370                 375                 380
Val Lys Arg Tyr Val Ala Ala Met Ile Arg Asp Ala Lys Thr Glu Glu
385                 390                 395                 400
Gly Leu Thr Glu Glu Asn Phe Lys Glu Leu Lys Gln Asp Ile Ser Ser
                405                 410                 415
Phe Arg Phe Glu Val Leu Gly Leu Leu Arg Gly Ser Lys Leu Ser Thr
            420                 425                 430
Ile Gln Ser Ala Asn Ala Ser Lys Glu Ser Ser Asn Ser Ala Asp Ser
        435                 440                 445
Asp Glu Lys Ser Asp Ser Glu Gly Asn Ser Lys Asp Lys Lys Lys Asn
    450                 455                 460
Phe Ser Leu Phe Asp Leu Thr Thr Leu Ile His Pro Arg Ser Ala Ala
465                 470                 475                 480
Ile Ala Ser Glu Arg His Asn Ile Ser Asn Gly Ser Ala Leu Val Val
                485                 490                 495
Gln Glu Pro Pro Arg Glu Lys Gln Arg Lys Val Asn Phe Val Thr Asp
            500                 505                 510
Ile Lys Asn Phe Gly Leu Phe His Arg Arg Ser Lys Gln Asn Ala Ala
        515                 520                 525
Glu Gln Asn Ala Asn Gln Ile Phe Ser Val Ser Glu Glu Val Ala Arg
    530                 535                 540
Gln Gln Ala Ala Gly Pro Leu Glu Arg Asn Ile Gln Leu Glu Ser Arg
545                 550                 555                 560
Gly Leu Ala Ser Arg Gly Asp Leu Ser Ile Pro Gly Leu Ser Glu Gln
                565                 570                 575
```

```
Cys Val Leu Val Asp His Arg Glu Arg Asn Thr Asp Thr Leu Gly Leu
            580                 585                 590
Gln Val Gly Lys Arg Val Cys Pro Phe Lys Ser Glu Lys Val Val Val
        595                 600                 605
Glu Asp Thr Val Pro Ile Ile Pro Lys Glu Lys His Ala Lys Glu Glu
    610                 615                 620
Asp Ser Ser Ile Asp Tyr Asp Leu Asn Leu Pro Asp Thr Val Thr His
625                 630                 635                 640
Glu Asp Tyr Val Thr Thr Arg Leu  *
                645                 648
```

<210> 1967
<211> 80
<212> PRT
<213> Homo sapiens

<400> 1967

```
Met Thr Gly Thr His Gln Tyr Ala Trp Val Ile Phe Val Phe Leu Ser
 1               5                  10                  15
Thr Tyr Arg Ile Ser Pro Cys Trp Pro Gly Trp Phe Gln Thr Pro Gly
            20                  25                  30
Leu Arg Trp Ser Ala Cys Leu Gly Leu Pro Gly Cys Trp Asp Cys Arg
        35                  40                  45
Arg Glu Pro Leu Gly Pro Ala Cys Ile Phe Tyr Gln Pro Gln Ile Gln
    50                  55                  60
Gln Gln Ala Glu Asp Ser Ala His Lys Thr Gly Leu Val Ser Trp  *
65                  70                  75                  79
```

<210> 1968
<211> 49
<212> PRT
<213> Homo sapiens

<400> 1968

```
Met Thr Tyr Ile Leu Val Tyr Lys Leu Gly Ser Ile Leu Leu Ser Phe
 1               5                  10                  15
Phe Leu Ile Cys Phe Glu Glu Phe Ser Ser Glu Asn Ser Gly Pro Gly
            20                  25                  30
Ile Phe Phe Val Glu Arg Val Leu Ile Leu Asn Leu Ile Ser Leu Ile
        35                  40                  45           48
*
```

<210> 1969
<211> 150
<212> PRT
<213> Homo sapiens

<400> 1969

```
Met His Val His Phe Trp Leu Val Thr Ala Ser Phe Ser Ser Ser Val
```

```
  1               5                  10                  15
Ala Trp Thr Thr Ala Glu Ile Thr Gly Gly Val Ser Gly Val Ala Ala
             20                  25                  30
Gly Val Gly Ser Trp Glu Gly Gly Ser Glu Arg Gly Asp Arg Phe Gly
         35                  40                  45
Asp Phe Phe Thr Leu Asn Val Ser Val Phe Arg Gly Val Phe Phe Phe
     50                  55                  60
Leu Ala Gly Leu Phe Ser Pro Ser Pro Ser Thr Pro Leu Ala Ser Ile
 65                  70                  75                  80
Ala Leu Ala Gly Ile Ser Lys Glu Ala Gly Asp Leu Glu Gly Glu Leu
                 85                  90                  95
Gly Val Leu Glu Asp Val Leu Lys Gly Ser Thr Asp Ser Ser Gln Val
            100                 105                 110
Ser Gly Ser Lys Leu Tyr Asp Cys Trp Gly Ser Leu Gly Asp Ser Cys
        115                 120                 125
Ile Phe Glu Val Glu Glu Lys Gly Leu Lys Leu Gly Ser Ser His Leu
    130                 135                 140
Ser Ile Ser Lys Val  *
145             149
```

<210> 1970
<211> 48
<212> PRT
<213> Homo sapiens

<400> 1970

```
Met Phe Gly Ser Arg Gly Leu Leu Cys Met Cys Val Phe Phe Phe Asn
  1               5                  10                  15
Ile Leu Ala Ser Gln Cys Lys Val Ile Ser Ser Gly Gly Met Leu Cys
             20                  25                  30
Cys Arg Thr Pro Thr Leu Leu Asp Tyr Leu Arg Gln His Phe Leu  *
         35                  40                  45      47
```

<210> 1971
<211> 64
<212> PRT
<213> Homo sapiens

<400> 1971

```
Met Leu Ile Phe Thr Val Leu Glu Leu Leu Leu Ala Ala Tyr Ser Ser
  1               5                  10                  15
Val Phe Trp Trp Lys Gln Leu Tyr Ser Asn Asn Pro Gly Val Ser Met
             20                  25                  30
Leu Thr Cys Arg Leu Ile Pro Ala Val Ser Gln Val Gln Ala Thr Ile
         35                  40                  45
Ile Gln Pro Gln Lys Val Ala Lys Arg Arg Ile Asn Tyr Cys Ser  *
     50                  55                  60          63
```

<210> 1972
<211> 211
<212> PRT

<213> Homo sapiens

<221> misc_feature
<222> (1)...(211)
<223> Xaa = any amino acid or nothing

<400> 1972

```
Met Thr Arg Met Leu Asn Met Leu Ile Val Phe Arg Phe Leu Arg Ile
  1               5                  10                  15
Ile Pro Ser Met Lys Pro Met Ala Val Val Ala Ser Thr Val Leu Gly
             20                  25                  30
Leu Val Gln Asn Met Arg Ala Phe Gly Gly Ile Leu Val Val Val Tyr
         35                  40                  45
Tyr Val Phe Ala Ile Ile Gly Ile Asn Leu Phe Arg Gly Val Ile Val
     50                  55                  60
Ala Leu Pro Gly Asn Ser Ser Leu Ala Pro Ala Asn Gly Ser Ala Pro
 65                  70                  75                  80
Cys Gly Ser Phe Glu Gln Leu Glu Tyr Trp Ala Asn Asn Phe Asp Asp
                 85                  90                  95
Phe Xaa Ala Ala Leu Val Thr Leu Trp Asn Leu Met Val Val Asn Asn
            100                 105                 110
Trp Gln Val Phe Leu Asp Ala Tyr Arg Arg Tyr Ser Gly Pro Trp Ser
        115                 120                 125
Lys Ile Tyr Phe Val Leu Trp Trp Leu Val Ser Ser Val Ile Trp Val
    130                 135                 140
Asn Leu Phe Leu Ala Leu Ile Leu Glu Asn Phe Leu His Lys Trp Asp
145                 150                 155                 160
Pro Arg Ser His Leu Gln Pro Leu Ala Gly Thr Pro Glu Ala Thr Tyr
                165                 170                 175
Gln Met Thr Val Glu Leu Leu Phe Arg Asp Ile Leu Glu Glu Pro Gly
            180                 185                 190
Glu Asp Glu Leu Thr Glu Arg Leu Ser Gln His Pro His Leu Trp Leu
        195                 200                 205
Cys Arg  *
    210
```

<210> 1973
<211> 53
<212> PRT
<213> Homo sapiens

<400> 1973

```
Met Ile Gln Tyr Ala Val Phe Val Leu Cys Gly Phe Leu Tyr Leu Cys
  1               5                  10                  15
Phe Met Leu Phe Phe Phe Ser Ser Val Thr Gln Ala Gly Val Ser Glu
             20                  25                  30
Pro Arg Ser Ser His Cys Thr Pro Ala Trp Ala Thr Glu Arg Asp Cys
         35                  40                  45
Val Ser Asn Lys  *
     50      52
```

<210> 1974
<211> 50

<212> PRT
<213> Homo sapiens

<400> 1974

```
Met Gly Val Thr Thr Ala Thr Leu Ile Ala Pro Ala Leu Arg Thr Leu
  1               5                  10                  15
Arg Thr Ser Ala Val Cys Ser Thr Thr Ala Glu Thr Ser Phe Ser Ala
             20                  25                  30
Cys Thr Phe Val Ser Thr Ser Cys Ser Lys Lys Gly Thr Pro Arg Phe
         35                  40                  45
Ser  *
 49
```

<210> 1975
<211> 87
<212> PRT
<213> Homo sapiens

<400> 1975

```
Met Cys Ser Ser Pro Ala Val Leu Leu Cys Ala Leu Val Val Gly Cys
  1               5                  10                  15
Pro Val Gly Phe Pro His Glu Ala Asp Pro Gly Ser Met Gln Arg Ala
             20                  25                  30
Ser Ser Leu Gly Leu His Gln Ala Ser Val Val Ser Ala Gly Trp Leu
         35                  40                  45
Gly Gln Ala Arg His Gly Ala His Leu Gly Cys Ser Leu Leu Pro Ser
     50                  55                  60
Gly Val His Gly Leu Trp Arg Pro Ser Val Gln Pro Arg Arg Asp Pro
 65                  70                  75                  80
Val Thr Glu Leu Gln Cys  *
                 85  86
```

<210> 1976
<211> 107
<212> PRT
<213> Homo sapiens

<400> 1976

```
Met Ala Leu Tyr Glu Leu Phe Ser His Pro Val Glu Arg Ser Tyr Arg
  1               5                  10                  15
Ala Gly Leu Cys Ser Lys Ala Ala Leu Phe Leu Leu Leu Ala Ala Ala
             20                  25                  30
Leu Thr Tyr Ile Pro Pro Leu Leu Val Ala Phe Arg Ser His Gly Phe
         35                  40                  45
Trp Leu Lys Arg Ser Ser Tyr Glu Glu Gln Pro Thr Val Arg Phe Gln
     50                  55                  60
His Gln Val Leu Leu Val Ala Leu Leu Gly Pro Glu Ser Asp Gly Phe
 65                  70                  75                  80
Leu Ala Trp Ser Thr Phe Pro Ala Phe Asn Arg Gln Gln Gly Asp Arg
                 85                  90                  95
Leu Arg Val Pro Leu Val Ser Trp Arg Arg  *
             100                 105 106
```

<210> 1977
<211> 134
<212> PRT
<213> Homo sapiens

<400> 1977

```
Met Val Thr Val Ala Met Ala Cys Ser Gly Ala Leu Thr Ala Leu Cys
  1               -5                  10                  15
Cys Leu Phe Val Ala Met Gly Val Leu Arg Val Pro Trp His Cys Pro
             20                  25                  30
Leu Leu Leu Val Thr Glu Gly Leu Leu Asp Met Leu Ile Ala Gly Gly
         35                  40                  45
Tyr Ile Pro Ala Leu Tyr Phe Tyr Phe His Tyr Leu Ser Ala Ala Tyr
     50                  55                  60
Gly Ser Pro Val Cys Lys Glu Arg Gln Ala Leu Tyr Gln Ser Lys Gly
 65                  70                  75                  80
Tyr Ser Gly Phe Gly Cys Ser Phe His Gly Ala Asp Ile Gly Ala Gly
                 85                  90                  95
Ile Phe Ala Ala Leu Gly Ile Val Val Phe Ala Leu Gly Ala Val Leu
            100                 105                 110
Ala Ile Lys Gly Tyr Arg Lys Val Arg Lys Leu Lys Glu Lys Pro Ala
        115                 120                 125
Glu Met Phe Glu Phe  *
    130             133
```

<210> 1978
<211> 61
<212> PRT
<213> Homo sapiens

<400> 1978

```
Met Thr Leu Arg Met Leu Val Pro Arg Leu Leu Leu Thr Arg Gln Leu
  1               5                  10                  15
Val Trp Phe Phe Ser Ala Ala Thr Glu Arg Asp Pro Glu Met Met Asn
             20                  25                  30
Gly Ile Pro Arg Lys Leu Met Ser Phe Pro Pro Ser Ser Val Thr Ser
         35                  40                  45
Arg Arg Ser Arg Arg Gly His His Leu Gln Ser Leu  *
     50                  55                  60
```

<210> 1979
<211> 66
<212> PRT
<213> Homo sapiens

<400> 1979

```
Met Leu Thr Ala Leu Pro Lys Ser Phe Val Phe Lys Val Val Gly Glu
  1               5                  10                  15
Trp Trp Trp Leu Phe Ile Cys Leu Val Leu Ala Phe Ala Asp Gly Lys
```

```
            20                  25                  30
Arg His Lys Tyr Ser Tyr Asp Ala Asn Val Phe Leu Gln Val Asn Tyr
        35                  40                  45
Ile Thr Trp Pro Asp Ser Phe Ser Pro Val Pro Ser Leu Pro Pro Ile
    50                  55                  60
Leu  *
 65
```

<210> 1980
<211> 51
<212> PRT
<213> Homo sapiens

<400> 1980

```
Met Asp Thr Pro Arg Ser Thr Val Phe Ser Leu Trp Phe Gly Ile His
  1               5                  10                  15
Lys Ala Ala Gly Ile Phe Gln Val Leu Val Gln Leu Leu Leu Leu Leu
            20                  25                  30
Thr Pro Tyr Pro Arg Tyr Pro Ser Pro Ser Pro Leu Pro Pro Tyr Ser
        35                  40                  45
Tyr Pro  *
    50
```

<210> 1981
<211> 79
<212> PRT
<213> Homo sapiens

<400> 1981

```
Met Met Trp Ala Ala Gly Ala Val Ala Ala Met Ser Ser Ile Thr Phe
  1               5                  10                  15
Pro Ala Val Ser Ala Leu Val Ser Arg Thr Ala Asp Ala Asp Gln Gln
            20                  25                  30
Gly Glu Leu Ile Gly Thr Ser Asp Asn Tyr Leu Lys Val Gln Asn Val
        35                  40                  45
Leu Ile Leu Cys Ser Val Ser Tyr Val Leu Lys His Lys Tyr Ile Phe
    50                  55                  60
Arg Gly Glu Thr Phe Lys Ile Ala Phe Asp Ile Asn Arg Lys Ser
 65                  70                  75              79
```

<210> 1982
<211> 156
<212> PRT
<213> Homo sapiens

<400> 1982

```
Met His Asn Asn Tyr Thr Ala Leu Leu Gly Val Trp Ile Tyr Gly Phe
  1               5                  10                  15
Phe Val Leu Met Leu Leu Val Leu Asp Leu Leu Tyr Tyr Ser Ala Met
            20                  25                  30
```

```
Asn Tyr Asp Ile Cys Lys Val Tyr Leu Ala Arg Trp Gly Ile Gln Gly
          35                  40                  45
Arg Trp Met Lys Gln Asp Pro Arg Arg Trp Gly Asn Pro Ala Arg Ala
      50                  55                  60
Pro Arg Pro Gly Gln Arg Ala Pro Gln Pro Gln Pro Pro Pro Gly Pro
 65                  70                  75                  80
Leu Pro Gln Ala Pro Gln Ala Val His Thr Leu Arg Gly Asp Ala His
                 85                  90                  95
Ser Pro Pro Leu Met Thr Phe Gln Ser Ser Ser Ala Trp Glu Gly Ala
            100                 105                 110
Ser Gln Gln Gln Glu Ile Pro Glu Asn Glu Glu Thr Glu Lys Gly Asp
        115                 120                 125
Asp Gln Ile Ser Ser Phe Leu Gly Val Thr Ser Asn Thr Lys Glu Ala
    130                 135                 140
Ser Val Ile Gly Ile Gln Lys Thr Val Asp Val Leu
145                 150                 155 156
```

<210> 1983
<211> 63
<212> PRT
<213> Homo sapiens

<400> 1983

```
Met Arg Leu Ile Arg Ile Trp Phe Ser Gly Lys Phe Phe Pro Ala Gly
  1               5                  10                  15
Leu His Ser Gln Ser Leu Pro Ser Ile Ser Ala Ala Ile Gly Leu Leu
             20                  25                  30
Met Leu Phe Thr Asn Leu Phe Thr Cys Ser Lys Cys Phe Val Ile Ser
         35                  40                  45
Val Ala Lys Thr Met Ser Ile Ile Ala Trp Arg Ser Val Arg  *
     50                  55                  60      62
```

<210> 1984
<211> 232
<212> PRT
<213> Homo sapiens

<400> 1984

```
Met Phe His Arg Cys Gly Ile Met Ala Leu Val Ala Ala Tyr Leu Asn
  1               5                  10                  15
Phe Val Ser Gln Met Ile Ala Val Pro Ala Phe Cys Gln His Val Ser
             20                  25                  30
Lys Val Ile Glu Ile Arg Thr Met Glu Ala Pro Tyr Phe Leu Pro Glu
         35                  40                  45
His Ile Phe Arg Asp Lys Cys Met Leu Pro Lys Ser Leu Glu Lys His
     50                  55                  60
Glu Lys Asp Leu Tyr Phe Leu Thr Asn Lys Ile Ala Glu Ser Leu Gly
 65                  70                  75                  80
Gly Lys Trp Asp Ile Val Leu Arg Asp Cys Gln Phe Arg Met Leu Pro
                 85                  90                  95
Gln Val Thr Asp Glu Asp Arg Leu Ser Arg Arg Lys Ser Ile Val Asp
            100                 105                 110
Thr Val Ser Ile Gln Val Asp Ile Leu Ser Asn Asn Val Pro Ser Asp
```

```
        115                 120                 125
Asp Val Val Ser Asn Thr Glu Glu Ile Thr Phe Glu Ala Leu Lys Lys
    130                 135                 140
Ala Ile Asp Thr Ser Gly Met Glu Glu Gln Glu Lys Glu Lys Arg Arg
145                 150                 155                 160
Leu Val Ile Glu Lys Phe Gln Lys Ala Pro Phe Glu Glu Ile Ala Ala
                165                 170                 175
Gln Cys Glu Ser Lys Ala Asn Leu Leu His Asp Arg Leu Ala Gln Ile
            180                 185                 190
Leu Glu Leu Thr Ile Arg Pro Pro Pro Ser Pro Ser Gly Thr Leu Thr
        195                 200                 205
Ile Thr Ser Gly His Ala Gln Tyr Gln Ser Val Pro Val Tyr Glu Met
    210                 215                 220
Lys Phe Pro Asp Leu Cys Val Tyr
225                 230     232
```

<210> 1985
<211> 141
<212> PRT
<213> Homo sapiens

<400> 1985

```
Met Asn Leu Ser Leu Pro Phe Leu Cys Leu Phe Leu Leu Ser Phe Ser
  1               5                  10                  15
Phe Lys Leu Ala Leu Gln Leu Arg Lys Val Ser Leu Leu Ser Leu Arg
             20                  25                  30
Leu Trp Gly Gln Ser Ile Cys Cys Leu Glu Lys Glu Gly Asn Gln Asp
         35                  40                  45
Ser Ser Gly Thr Gln Met Ser Ser Ser Leu Ala Leu Leu Asn Pro Leu
     50                  55                  60
Leu His Asn Trp Ser Phe Ile Leu Ala Leu Asn Asp Pro Ala Gly His
 65                  70                  75                  80
His Gly Phe Leu Phe Leu Leu Val Phe Phe Phe Ser Glu Thr Glu Ser
                 85                  90                  95
His Ser Val Thr Gln Ala Gly Val Gln Trp Arg Asp Leu Ser Ser Leu
            100                 105                 110
Gln Pro Leu Pro Pro Gly Phe Lys Arg Phe Phe Cys Leu Ser Leu Pro
        115                 120                 125
Ser Ser Trp Asp Tyr Arg Cys Ala Thr Thr Pro Gly  *
    130                 135                 140
```

<210> 1986
<211> 292
<212> PRT
<213> Homo sapiens

<400> 1986

```
Met Ile Ser Val Ser Ala Met Ala Ile Ala Phe Leu Thr Leu Gly Tyr
  1               5                  10                  15
Phe Phe Lys Ile Lys Glu Ile Lys Ser Pro Glu Met Ala Glu Asp Trp
             20                  25                  30
Asn Thr Phe Leu Leu Arg Phe Asn Asp Leu Asp Leu Cys Val Ser Glu
         35                  40                  45
```

```
Asn Glu Thr Leu Lys His Leu Thr Asn Asp Thr Thr Thr Pro Glu Ser
     50                  55                  60
Thr Met Thr Ser Gly Gln Ala Arg Ala Ser Thr Gln Ser Pro Gln Ala
 65                  70                  75                  80
Leu Glu Asp Ser Gly Pro Val Asn Ile Ser Val Ser Ile Thr Leu Thr
                85                  90                  95
Leu Asp Pro Leu Lys Pro Phe Gly Gly Tyr Ser Arg Asn Val Thr His
            100                 105                 110
Leu Tyr Ser Thr Ile Leu Gly His Gln Ile Gly Leu Ser Gly Arg Glu
        115                 120                 125
Ala His Glu Glu Ile Asn Ile Thr Phe Thr Leu Pro Thr Ala Trp Ser
    130                 135                 140
Ser Asp Asp Cys Ala Leu His Gly His Cys Glu Gln Val Val Phe Thr
145                 150                 155                 160
Ala Cys Met Thr Leu Thr Ala Ser Pro Gly Val Phe Pro Val Thr Val
                165                 170                 175
Gln Pro Pro His Cys Val Pro Asp Thr Tyr Ser Asn Ala Thr Leu Trp
            180                 185                 190
Tyr Lys Ile Phe Thr Thr Ala Arg Asp Ala Asn Thr Lys Tyr Ala Gln
        195                 200                 205
Asp Tyr Asn Pro Phe Trp Cys Tyr Lys Gly Ala Ile Gly Lys Val Tyr
    210                 215                 220
His Ala Leu Asn Pro Lys Leu Thr Val Ile Val Pro Asp Asp Asp Arg
225                 230                 235                 240
Ser Leu Ile Asn Leu His Leu Met His Thr Ser Tyr Phe Leu Phe Val
                245                 250                 255
Met Val Ile Thr Met Phe Cys Tyr Ala Val Ile Lys Gly Arg Pro Ser
            260                 265                 270
Lys Leu Arg Gln Ser Asn Pro Glu Phe Cys Pro Glu Lys Val Ala Leu
        275                 280                 285
Ala Glu Ala  *
    290 291
```

<210> 1987
<211> 186
<212> PRT
<213> Homo sapiens

<400> 1987

```
Met Ala Gly Pro Arg Pro Arg Trp Arg Asp Gln Leu Leu Phe Met Ser
  1               5                  10                  15
Ile Ile Val Leu Val Ile Val Val Ile Cys Leu Met Leu Tyr Ala Leu
             20                  25                  30
Leu Trp Glu Ala Gly Asn Leu Thr Asp Leu Pro Asn Leu Arg Ile Gly
         35                  40                  45
Phe Tyr Asn Phe Cys Leu Trp Asn Glu Asp Thr Ser Thr Leu Gln Cys
     50                  55                  60
His Gln Phe Pro Glu Leu Glu Ala Leu Gly Val Pro Arg Val Gly Leu
 65                  70                  75                  80
Gly Leu Ala Arg Leu Gly Val Tyr Gly Ser Leu Val Leu Thr Leu Phe
                85                  90                  95
Ala Pro Gln Pro Leu Leu Leu Ala Gln Cys Asn Ser Asp Glu Arg Ala
            100                 105                 110
Trp Arg Leu Ala Val Gly Phe Leu Ala Val Ser Ser Val Leu Leu Ala
        115                 120                 125
Gly Gly Leu Gly Leu Phe Leu Ser Tyr Val Trp Lys Trp Val Arg Leu
```

```
    130                 135                 140
Ser Leu Pro Gly Pro Gly Phe Leu Ala Leu Gly Ser Ala Gln Ala Leu
145                 150                 155                 160
Leu Ile Leu Leu Leu Ile Ala Met Ala Val Phe Pro Leu Arg Ala Glu
                165                 170                 175
Arg Ala Glu Ser Lys Leu Glu Ser Cys  *
            180                 185
```

<210> 1988
<211> 47
<212> PRT
<213> Homo sapiens

<400> 1988

```
Met Phe Asn Leu Lys Glu Ile Pro Leu Ile Leu Tyr Val Leu Leu Ser
  1               5                  10                  15
Val Val Cys Phe Ser Phe Ser Tyr Gly Val Glu Pro Pro Lys Ser Trp
             20                  25                  30
Ser Gln Gly Lys Lys Gly Val Val Thr Gly Asp Ser Leu Leu  *
         35                  40                  45  46
```

<210> 1989
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1989

```
Met Thr Leu Pro Cys Ala Ile Gln Met Phe Ile Ala Ala Val Gln Val
  1               5                  10                  15
Leu Ser Val Thr Tyr Leu Asp Leu Gln Pro His Leu Asn Glu Ser Leu
             20                  25                  30
Leu Thr Val Ser Leu Ile Phe Arg Phe Ile Phe Asn Leu Leu Phe Tyr
         35                  40                  45
Leu Gly Leu Thr Phe Ser Val Thr Lys  *
     50                  55      57
```

<210> 1990
<211> 80
<212> PRT
<213> Homo sapiens

<400> 1990

```
Met Ile Ser Phe Val Leu Val Lys Gly Leu Phe Leu Lys Cys Thr Phe
  1               5                  10                  15
His Phe Pro Leu Phe Asn Arg His Ile Met Ser Cys Ser Phe Leu Arg
             20                  25                  30
Ser Asp Phe Met His Gly Asp Ser Met Cys Phe Ser Ser Ser Tyr Met
         35                  40                  45
Leu Leu Asn Glu Ser Leu Tyr Ile Ser Phe His Thr Met Val Ile Lys
     50                  55                  60
```

```
Thr His Trp Ala Val Cys Gly Cys Gly Phe Ile Ser Glu Lys Leu  *
 65                  70                  75                  79
```

<210> 1991
<211> 48
<212> PRT
<213> Homo sapiens

<400> 1991

```
Met Val Arg Trp Lys Arg Glu Ile His Glu Leu Leu Trp Pro Leu Trp
  1               5                  10                  15
Phe Cys Ser Trp Pro Arg Val Phe Glu Lys Gln Arg Ser Met Thr Asp
            20                  25                  30
Phe Thr Cys Ser Ala Phe Ser Ala Phe Cys Leu Phe Cys Cys Pro  *
        35                  40                  45      47
```

<210> 1992
<211> 51
<212> PRT
<213> Homo sapiens

<400> 1992

```
Met Leu Phe Ser Leu Gln Thr Ala Ile Val Tyr Cys Thr Ile Thr Val
  1               5                  10                  15
Leu Cys His Arg Thr Leu Ile Phe Ser Ser Met His Lys Cys Ile Met
            20                  25                  30
Leu Phe Pro Ile Ile His Ile Cys Ser Tyr Val Phe Phe Val Ile Tyr
        35                  40                  45
Ser Phe  *
     50
```

<210> 1993
<211> 79
<212> PRT
<213> Homo sapiens

<400> 1993

```
Met Trp Cys Ala Glu Met Leu His Ile Leu Phe Met Gly Leu Arg Val
  1               5                  10                  15
Asn Leu Asn His Glu Thr Phe Leu Ile Ile Cys Cys Glu Ile Tyr Gln
            20                  25                  30
Ala Trp Met Ile Ser Val Phe Leu Val Val Cys Cys Phe Phe Lys Glu
        35                  40                  45
Val Ile Gln Val Pro Leu Leu Ser Cys Gln His Thr Lys Leu Leu Lys
     50                  55                  60
Lys Leu Thr Ile Ser Phe Arg Ser Asn Ser Gln Pro Val Glu  *
 65                  70                  75          78
```

<210> 1994
<211> 52
<212> PRT
<213> Homo sapiens

<400> 1994
Met Thr Ser Leu Gln Lys Arg Leu Leu Ser His Cys Met Gln Cys Thr
1 5 10 15
Met Leu Leu Gly Ile Cys Gly Gln Cys Lys Asp Asp Asp Ile Leu Ala
20 25 30
Ser Trp Val Ile Gln Glu Phe Thr Ala Met Gln Ser Arg Ser Arg Asn
35 40 45
Leu Gln Ser Arg
50 52

<210> 1995
<211> 164
<212> PRT
<213> Homo sapiens

<400> 1995
Met Leu Leu Ala Thr Leu Leu Leu Leu Leu Leu Gly Gly Ala Leu Ala
1 5 10 15
His Pro Asp Arg Ile Ile Phe Pro Asn His Ala Cys Glu Asp Pro Pro
20 25 30
Ala Val Leu Leu Glu Val Gln Gly Thr Leu Gln Arg Pro Leu Val Arg
35 40 45
Asp Ser Arg Thr Ser Pro Ala Asn Cys Thr Trp Leu Ile Leu Gly Ser
50 55 60
Lys Glu Arg Thr Val Thr Ile Arg Phe Gln Lys Leu His Leu Ala Cys
65 70 75 80
Gly Ser Glu Arg Leu Thr Leu Arg Ser Pro Leu Gln Pro Leu Ile Ser
85 90 95
Leu Cys Glu Ala Pro Pro Ser Pro Leu Gln Leu Pro Gly Gly Asn Val
100 105 110
Thr Ile Thr Tyr Ser Tyr Ala Gly Gly Gln Ser Thr His Gly Pro Gly
115 120 125
Leu Pro Ala Leu Leu Gln Ala Ser Pro Ser Pro Trp Cys Leu Cys Arg
130 135 140
Leu Ala Asp Val Leu Ala Arg Arg Gly Ser Met Pro Glu Pro Pro Leu
145 150 155 160
Cys Ile Cys *
163

<210> 1996
<211> 77
<212> PRT
<213> Homo sapiens

<400> 1996
Met Trp Tyr Gly Val Phe Leu Trp Ala Leu Val Ser Ser Leu Phe Phe
1 5 10 15

```
His Val Pro Ala Gly Leu Leu Ala Leu Phe Thr Leu Arg His His Lys
            20                  25                  30
Tyr Gly Ala Ala Ile Ala Gly Val Tyr Arg Ala Ala Gly Lys Glu Met
        35                  40                  45
Ile Pro Phe Glu Ala Leu Thr Leu Gly Thr Gly Gln Thr Phe Cys Val
    50                  55                  60
Leu Val Val Ser Phe Leu Arg Ile Leu Ala Thr Leu  *
65                  70                  75  76
```

<210> 1997
<211> 233
<212> PRT
<213> Homo sapiens

<400> 1997

```
Met Gly Leu Pro Gly Leu Phe Cys Leu Ala Val Leu Ala Ala Ser Ser
  1               5                  10                  15
Phe Ser Lys Ala Arg Glu Glu Glu Ile Thr Pro Val Val Ser Ile Ala
            20                  25                  30
Tyr Lys Val Leu Glu Val Phe Pro Lys Gly Arg Trp Val Leu Ile Thr
        35                  40                  45
Cys Cys Ala Pro Gln Pro Pro Pro Pro Ile Thr Tyr Ser Leu Cys Gly
    50                  55                  60
Thr Lys Asn Ile Lys Val Ala Lys Lys Val Val Lys Thr His Glu Pro
65                  70                  75                  80
Ala Ser Phe Asn Leu Asn Val Thr Leu Lys Ser Ser Pro Asp Leu Leu
                85                  90                  95
Thr Tyr Phe Cys Arg Ala Ser Ser Thr Ser Gly Ala His Val Asp Ser
            100                 105                 110
Ala Arg Leu Gln Met His Trp Glu Leu Trp Ser Arg Gln Arg Gly Arg
        115                 120                 125
Pro Gln Gly Gly Asp Asp Leu Pro Gly Val Leu Gly Gln Pro Thr Tyr
    130                 135                 140
His Gln Gln Pro Asp Arg Glu Gly Trp Ala Gly Pro Pro Ala Ala Glu
145                 150                 155                 160
Thr Met Pro Gln Glu Ala Cys Gln Leu Ser Pro Ser Cys Arg Ala Arg
                165                 170                 175
His Arg Thr Trp Phe Trp Cys Gln Ala Cys Lys Gln Arg Gln Cys Ser
            180                 185                 190
Ser Thr Ala Pro Ser Gln Trp Leu Pro Gln Val Val Thr Gln Lys Met
        195                 200                 205
Glu Asp Trp Gln Gly Pro Pro Gly Glu Pro His Pro Cys Leu Ala Ala
    210                 215                 220
Leu Gln Glu His Pro Pro Ser Glu  *
225                 230     232
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<210> 1998
<211> 58
<212> PRT
<213> Homo sapiens

<400> 1998

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Met Pro Ala Ile Val Val Phe Leu Phe Cys Phe Val Ile Ser Asp Gly
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  1               5                  10                  15
Leu Thr Leu Ser Pro Arg Leu Asp Cys Thr Gly Leu Asn Leu Leu Ser
            20                  25                  30
Ser Ser Asp Arg Pro Thr Ser Ala Ser Pro Val Ala Gly Thr Ile Ala
        35                  40                  45
Val Gln His His Ala Trp Leu Ile Phe  *
    50                  55      57
```

<210> 1999
<211> 66
<212> PRT
<213> Homo sapiens

<400> 1999

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Met Trp Leu Leu Val Thr Leu Ser Pro Arg Leu Leu Leu Ser Pro Ser
  1               5                  10                  15
His Phe Thr Leu Glu Gly Pro Gln Ile Asp Gln Ala His Ser Glu Leu
            20                  25                  30
Gln Val Leu Pro Leu Val Arg Pro Ser Ala Val Pro Leu Leu Gln Arg
        35                  40                  45
Ala Ser Trp Leu Arg Ser Arg Cys Leu His Leu Pro Lys Thr Val Leu
    50                  55                  60
Val  *
 65
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<210> 2000
<211> 106
<212> PRT
<213> Homo sapiens

<400> 2000

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Met Gly Arg Cys Leu Ser Leu Gly Ile Leu Arg Gln Gly Leu Cys Cys
  1               5                  10                  15
Pro Cys Trp Ser Val Val Ala Glu Ser Gly Leu Thr Ala Ser Leu Gly
            20                  25                  30
Gly Ser Gly His Pro Ala Thr Ser Cys Ser Lys Glu Ala Gly Thr Thr
        35                  40                  45
Gly Glu Cys Met His His Thr Gln Leu Gly Ile Gln Thr Leu Arg Thr
    50                  55                  60
Tyr Tyr Met Pro Asp Ser Val Glu Leu Ser Glu Thr Met Ser Gly Cys
 65                  70                  75                  80
Asn Trp Leu Pro Thr Gln Gln Thr Gln Ser Trp Ala Asn Ile Leu Arg
                85                  90                  95
Val Tyr Leu Thr Leu Lys Tyr Arg Phe Ser
            100                 105 106
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<210> 2001
<211> 88
<212> PRT
<213> Homo sapiens

<400> 2001

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 1               5                  10                  15
Ala Leu Pro Asn Pro Leu Ser Ala Arg Ala Glu Pro Pro Gln Val Arg
            20                  25                  30
Gly Arg Gly Arg Leu Gly His Val Gly Ser Trp Gly Ser Ser Arg Pro
        35                  40                  45
Gly Trp Arg Gly Leu Lys Glu Cys Cys Cys Gln Glu Leu Arg Gly Pro
    50                  55                  60
Glu Arg Gly Val Tyr Ala Trp Arg Gly Gln Asp Leu Lys Gly Arg Arg
65                  70                  75                  80
Tyr Leu Ala Glu Gly His Leu  *
                85      87
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<210> 2002
<211> 85
<212> PRT
<213> Homo sapiens

<400> 2002

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Met Arg Lys Leu Ile Ala Gly Leu Ile Phe Leu Lys Ile Trp Thr Cys
 1               5                  10                  15
Thr Val Arg Thr Ser Thr Asp Leu Pro Gln Thr Glu Asp Cys Ser Gln
            20                  25                  30
Cys Ile His Gln Val Thr Glu Ile Gly Gln Lys Val Ala Thr Val Leu
        35                  40                  45
Leu Phe Tyr Gly Tyr Tyr Lys Tyr Thr Gly Thr Leu Lys Arg Thr Cys
    50                  55                  60
Leu Tyr Asn Val Ile Leu Tyr Lys Val Tyr Ser Pro Gly Asn Asp Gln
65                  70                  75                  80
Pro Asp Val Leu  *
            84
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<210> 2003
<211> 46
<212> PRT
<213> Homo sapiens

<400> 2003

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Met Ala Phe Ala Ser Val Leu Leu Ala Arg Ala Ser Pro Ala Val Val
 1               5                  10                  15
Arg Ala Cys Leu Ser Arg Cys Ala Tyr Gly Val Gly Ser Asp Cys Pro
            20                  25                  30
His Leu Val Thr Leu Ala Ala Leu Ile Leu Phe Trp Val  *
        35                  40                  45
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<210> 2004
<211> 51
<212> PRT
<213> Homo sapiens

<400> 2004
Met Trp Leu Phe Ile Ala Ser Lys Cys Ile Phe Leu Leu Ile Val Pro
1 5 10 15
Asn Phe Ile Phe Val Phe Trp Arg Lys Val Phe Ser His Asp Arg Leu
20 25 30
Asn Ile Ala Tyr Ser Phe Glu Leu Ser Ser Lys Tyr Ile Phe Ile Leu
35 40 45
Phe Ile *
50

<210> 2005
<211> 66
<212> PRT
<213> Homo sapiens

<400> 2005
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Arg Lys Gly Pro Phe Pro Asn Thr Lys Asp Leu Ser Gly Trp Thr Pro
20 25 30
Ser Ser Gly Arg Glu Glu Leu Trp Lys Gly Lys Arg Ala Ala Ala Ala
35 40 45
Thr Arg Asn Pro Leu Val Leu Thr Gly Leu Gly Ser Pro Ser Ala Arg
50 55 60
Leu *
65

<210> 2006
<211> 46
<212> PRT
<213> Homo sapiens

<400> 2006
Met Leu Val Pro Thr Phe Phe Leu Leu Ser Leu Leu Asp Gln Ser Cys
1 5 10 15
Leu Ser Ile Cys Val Ser Gln Asp Tyr Phe Ser Ser Ile Val Val Gln
20 25 30
Ile Arg Gln Ile Gly Ser Leu Cys Leu Asn Lys Ser Leu *
35 40 45

<210> 2007
<211> 87
<212> PRT
<213> Homo sapiens

<400> 2007
Met Pro Thr Leu Ala Lys Trp Ile Leu Ser Leu Ser Met Thr Ser Thr
1 5 10 15

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Thr Trp Ser Pro Cys Ser Ser Met Ile Pro Leu Met Ala Ser Ser Thr
            20                  25                  30
Ala Pro Ser Arg Leu Arg Thr Gly Ser Leu Pro Ser Met Thr Ile Pro
        35                  40                  45
Ser Pro Ser Arg Arg Ser Glu Ile Pro Pro Lys Ser Ser Gly Val Met
    50                  55                  60
Pro Ala Leu Ile Ile Leu Trp Arg Pro Pro Ala Ser Leu Pro Ala Trp
65                  70                  75                  80
Arg Arg Leu Gly Ile Thr  *
                85  86
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<210> 2008
<211> 58
<212> PRT
<213> Homo sapiens

<400> 2008

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Met Pro Ala Ile Val Val Phe Leu Phe Cys Phe Val Ile Ser Asp Gly
  1               5                  10                  15
Leu Thr Leu Ser Pro Arg Leu Asp Cys Thr Gly Leu Asn Leu Leu Ser
            20                  25                  30
Ser Ser Asp Arg Pro Thr Ser Ala Ser Pro Val Ala Gly Thr Ile Ala
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Val Gln His His Ala Trp Leu Ile Phe  *
    50                  55      57
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<210> 2009
<211> 46
<212> PRT
<213> Homo sapiens

<400> 2009

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  1               5                  10                  15
Tyr Ala Leu Thr Phe Pro Gly Cys Ser Trp Leu Pro Asp Trp Ala Leu
            20                  25                  30
Val Phe Ala Gly Gly Ile Gly Gln Ala Gln Phe Ser His Met
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<211> 235
<212> PRT
<213> Homo sapiens

<400> 2010

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Met Glu Leu Gly Cys Trp Thr Gln Leu Gly Leu Thr Phe Leu Gln Leu
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Leu Leu Ile Ser Ser Leu Pro Arg Glu Tyr Thr Val Ile Asn Glu Ala
            20                  25                  30
Cys Pro Gly Ala Glu Trp Asn Ile Met Cys Arg Glu Cys Cys Glu Tyr
```

```
         35                  40                  45
Asp Gln Ile Glu Cys Val Cys Pro Gly Lys Arg Glu Val Val Gly Tyr
     50                  55                  60
Thr Ile Pro Cys Cys Arg Asn Glu Glu Asn Glu Cys Asp Ser Cys Leu
 65                  70                  75                  80
Ile His Pro Gly Cys Thr Ile Phe Glu Asn Cys Lys Ser Cys Arg Asn
                 85                  90                  95
Gly Ser Trp Gly Gly Thr Leu Asp Asp Phe Tyr Val Lys Gly Phe Tyr
            100                 105                 110
Cys Ala Glu Cys Arg Ala Gly Trp Tyr Gly Gly Asp Cys Met Arg Cys
        115                 120                 125
Gly Gln Val Leu Arg Ala Pro Lys Gly Gln Ile Leu Leu Glu Ser Tyr
    130                 135                 140
Pro Leu Asn Ala His Cys Glu Trp Thr Ile His Ala Lys Pro Gly Phe
145                 150                 155                 160
Val Ile Gln Leu Arg Phe Val Met Leu Ser Leu Glu Phe Asp Tyr Met
                165                 170                 175
Cys Gln Tyr Asp Tyr Val Glu Gly Cys Asp Gly Asp Asn Arg Asp Gly
            180                 185                 190
His Ile Ile Lys Arg Val Cys Gly Asn Glu Arg Ala Ala Pro Ile His
        195                 200                 205
Asn Ile Arg Ile Leu Thr Ser Arg Pro Phe Pro Leu Pro Gly Leu Ser
    210                 215                 220
Lys Ile Leu Thr Gly Phe His Ala Pro Phe  *
225                 230                 234
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<210> 2011
<211> 61
<212> PRT
<213> Homo sapiens

<400> 2011

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Met Val Phe Ala Trp Gly Leu Ala Val Asn Lys Thr Ser Leu Val Pro
  1               5                  10                  15
Ile Phe Met Asp Leu Ser Leu Ala Gly Lys Ile Tyr Ile Lys Gln Arg
             20                  25                  30
Met Arg Met Glu Glu Asn Leu Leu Gly Asp Asn Glu Val Lys Glu Glu
         35                  40                  45
Lys Asp Gln Ala Val Lys Trp Gln Thr Leu Arg Trp  *
     50                  55                  60
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<210> 2012
<211> 107
<212> PRT
<213> Homo sapiens

<400> 2012

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Met Ile Arg Cys Gly Leu Ala Cys Glu Arg Cys Arg Trp Phe Leu Thr
  1               5                  10                  15
Leu Leu Leu Leu Ser Ala Ile Ala Phe Asp Ile Ile Ala Leu Ala Gly
             20                  25                  30
Arg Gly Trp Leu Gln Ser Ser Asp Arg Val Gln Thr Ser Ser Leu Trp
         35                  40                  45
```

```
Arg Arg Cys Phe Leu Pro Gln Gly Arg Arg Arg Arg Gln Arg Val Leu
     50                  55                  60
Arg Gly Arg Leu Pro Gln Pro His Gly Val Arg Val Gly Ser Ser Ser
 65                  70                  75                  80
Ala Ala Met Leu Phe Trp Gly Val Ser Ile Leu Glu Ile Cys Phe Ile
                 85                  90                  95
Leu Ser Phe Phe Val Leu Cys Val Pro Gln Ile
            100                 105     107
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<210> 2013
<211> 67
<212> PRT
<213> Homo sapiens

<400> 2013

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Met Gly Val Val Leu Tyr Val Leu Val Cys Gly Ala Leu Pro Phe Asp
  1               5                  10                  15
Gly Pro Thr Leu Pro Ile Leu Arg Gln Arg Val Leu Gly Arg Lys Ile
            20                  25                  30
Pro Asp Ser Val Phe His Val Arg Arg Leu Arg Ala Pro Tyr Pro Lys
        35                  40                  45
Asp Val Gly Pro Arg Pro Ile Gln Thr Ala Asn His Ser Pro Asn Gln
     50                  55                  60
Gly Ala  *
 65  66
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<210> 2014
<211> 59
<212> PRT
<213> Homo sapiens

<400> 2014

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Met Phe Leu Arg Phe Pro Leu Arg Phe Gly Ile Leu Ala Asp Lys Leu
  1               5                  10                  15
Ile Leu Tyr Lys Ala Ser His Phe Thr Met Leu Ser Val Pro Gly Leu
            20                  25                  30
Tyr Leu Ser Thr Leu Leu Glu Gly Ile Phe Ile Leu Lys Lys Leu Ser
        35                  40                  45
Phe Met Arg Arg Met Gly Val His Ala Thr  *
     50                  55          58
```

<210> 2015
<211> 55
<212> PRT
<213> Homo sapiens

<400> 2015

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Met Val Arg Leu Gln Val Leu Val Leu Val Phe Arg Val Val Gly Ser
  1               5                  10                  15
Gln Gln Met Leu Arg Gln Gly Ala Ala Gly Ala Arg Ser His Arg Val
```

```
            20                  25                  30
Leu Ala Ser Leu His Phe Gln His Gly Phe Gly Thr Phe His Thr Pro
        35                  40                  45
Ala Arg Ala Gly Gly Ser Glu
    50                  55
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<210> 2016
<211> 64
<212> PRT
<213> Homo sapiens

<400> 2016

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Met Ser Leu Arg Phe Cys Phe Cys Leu Pro Val Cys Pro Ser Leu Pro
  1               5                  10                  15
Ile Ser Val Phe His Val Phe Leu Ser Val Ser Asp His Pro Val Ser
            20                  25                  30
Leu Cys Leu Thr Val Ser Gly His Glu Met Ser Val Ile Val Ala Arg
        35                  40                  45
Phe Thr Leu Ser Leu Tyr Leu Phe Pro Leu Arg Ser Gly Ile Ser  *
    50                  55                  60          63
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<210> 2017
<211> 58
<212> PRT
<213> Homo sapiens

<400> 2017

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Met Ile Leu Leu Leu Ser Thr Phe Phe Cys Cys Phe Arg Glu Asp Ser
  1               5                  10                  15
Cys Phe Tyr Lys Lys Tyr Val Gly Leu Val Gln Trp Leu Met Pro Val
            20                  25                  30
Ile Pro Ala Leu Trp Glu Ala Lys Val Gly Gly Ser Leu Glu Val Trp
        35                  40                  45
Ser Ser Arg Pro Ala Trp Pro Ile Arg  *
    50                  55      57
```

<210> 2018
<211> 66
<212> PRT
<213> Homo sapiens

<400> 2018

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Met Leu His Ile Ser Ser Ala Phe His Cys Tyr Ala Phe Leu Pro Leu
  1               5                  10                  15
Phe Ala Leu Thr His Asn Phe Ile Phe Leu Phe Tyr Leu Leu Ser Leu
            20                  25                  30
Ser Pro Lys Leu Glu Cys Lys Phe Gln Glu Gly Arg Asp Phe Tyr Leu
        35                  40                  45
Phe Phe Phe Val Phe Pro Ile Phe Trp His Val Trp His Arg Lys Gly
    50                  55                  60
```

Ile *
65

PATENT COOPERATION TREATY

PCT

DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH REPORT

(PCT Article 17(2)(a), Rule 13*ter*.1(c) and 39)

Applicant's or agent's file reference	**IMPORTANT DECLARATION**	Date of mailing (day/month/year)
21272-018		27 JUN 2001
International application No.	International filing date *(day/month/year)*	(Earliest) Priority date *(day/month/year)*
PCT/US01/02687	25 January 2001 (25.01.2001)	25 January 2000 (25.01.2000)
International Patent Classification (IPC) or both national classification and IPC		
IPC(7): C12P 21/06 and US Cl.: 435/69.1		
Applicant		
HYSEQ, INC.		

This International Searching Authority hereby declares, according to Article 17(2)(a), that **no international search report will be established** on the international application for the reasons indicated below.

1. ☐ The subject matter of the international application relates to:
   - a. ☐ scientific theories.
   - b. ☐ mathematical theories
   - c. ☐ plant varieties.
   - d. ☐ animal varieties.
   - e. ☐ essential biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
   - f. ☐ schemes, rules or methods of doing business.
   - g. ☐ schemes, rules or methods of performing purely mental acts.
   - h. ☐ schemes, rules or methods of playing games.
   - i. ☐ methods for treatment of the human body by surgery or therapy.
   - j. ☐ methods for treatment of the animal body by surgery or therapy.
   - k. ☐ diagnostic methods practised on the human or animal body.
   - l. ☐ mere presentations of information.
   - m. ☐ computer programs for which this International Searching Authority is not equipped to search prior art.

2. ☒ The failure of the following parts of the international application to comply with prescribed requirements prevents a meaningful search from being carried out:
   ☐ the description ☒ the claims ☐ the drawings

3. ☒ The failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions prevents a meaningful search from being carried out:
   ☐ the written form has not been furnished or does not comply with the standard.
   ☒ the computer readable form has not been furnished or does not comply with the standard.

4. Further comments:

Name and mailing address of the ISA/US	Authorized officer
Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Young J. Kim

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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60/180,628	4 February 2000 (04.02.2000)	US
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60/186,350	2 March 2000 (02.03.2000)	US
60/189,874	16 March 2000 (16.03.2000)	US
60/190,076	17 March 2000 (17.03.2000)	US
60/198,123	18 April 2000 (18.04.2000)	US
60/205,515	19 May 2000 (19.05.2000)	US
60/209,467	7 June 2000 (07.06.2000)	US
60/214,886	28 June 2000 (28.06.2000)	US
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60/241,809	20 October 2000 (20.10.2000)	US
60/241,785	20 October 2000 (20.10.2000)	US

[Continued on next page]

(54) Title: NUCLEIC ACIDS, PROTEINS, AND ANTIBODIES

(57) Abstract:

WO 01/55441 A2

60/241,786	20 October 2000 (20.10.2000)	US
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60/256,719	5 December 2000 (05.12.2000)	US
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60/251,988	5 December 2000 (05.12.2000)	US
60/251,479	6 December 2000 (06.12.2000)	US
60/251,869	8 December 2000 (08.12.2000)	US
60/251,856	8 December 2000 (08.12.2000)	US
60/251,868	8 December 2000 (08.12.2000)	US
60/251,990	8 December 2000 (08.12.2000)	US
60/251,989	8 December 2000 (08.12.2000)	US
60/254,097	11 December 2000 (11.12.2000)	US
60/259,678	5 January 2001 (05.01.2001)	US

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(54) Title: POLYNUCLEOTIDES ENCODING HUMAN PROTEASE HOMOLOGS

(57) Abstract: Novel human polynucleotide and polypeptide sequences are disclosed that can be used in therapeutic, diagnostic, and pharmacogenomic applications.

POLYNUCLEOTIDES ENCODING HUMAN PROTEASE HOMOLOGS

The present application claims the benefit of U.S. Provisional Application Number 60/171,566 which was filed on December 22, 1999 and is herein incorporated by reference in its entirety.

1. INTRODUCTION

The present invention relates to the discovery, identification, and characterization of novel human polynucleotides encoding proteins sharing sequence similarity with mammalian proteases. The invention encompasses the described polynucleotides, host cell expression systems, the encoded protein, fusion proteins, polypeptides and peptides, antibodies to the encoded proteins and peptides, and genetically engineered animals that either lack or over express the disclosed sequences, antagonists and agonists of the proteins, and other compounds that modulate the expression or activity of the proteins encoded by the disclosed polynucleotides that can be used for diagnosis, drug screening, clinical trial monitoring and the treatment of physiological disorders.

2. BACKGROUND OF THE INVENTION

Proteases cleave protein substrates as part of degradation, maturation, and secretory pathways within the body. Proteases have been associated with, *inter alia*, regulating development, modulating cellular processes, fertility, and infectious disease.

3. SUMMARY OF THE INVENTION

The present invention relates to the discovery, identification, and characterization of nucleotides that encode novel human proteins, and the corresponding amino acid sequences of these proteins. The novel human proteins (NHPs) described for the first time herein share structural similarity with animal proteases, and particularly trypsin-like proteases such as oviductin.

The novel human nucleic acid (cDNA) sequences described herein, encode a proteins/open reading frames (ORFs) of 306, 302, and 164 amino acids in length (see SEQ ID NOS: 2, 4, and 6 respectively).

The invention also encompasses agonists and antagonists of the described NHPs, including small molecules, large molecules, mutant NHPs, or portions thereof that compete with native NHPs, NHP peptides, and NHP antibodies, as well as nucleotide sequences that can be used to inhibit the expression of the described NHPs (*e.g.*, antisense and ribozyme molecules, and gene or regulatory sequence replacement constructs) or to enhance the expression of the described NHPs (*e.g.*, expression constructs that place the described sequence under the control of a strong promoter system), and transgenic animals that express a NHP transgene, or "knock-outs" (which can be conditional) that do not express a functional NHP.

Further, the present invention also relates to processes for identifying compounds that modulate, *i.e.*, act as agonists or antagonists, of NHP expression and/or NHP activity that utilize purified preparations of the described NHP and/or NHP product, or cells expressing the same. Such compounds can be used as therapeutic agents for the treatment of any of a wide variety of symptoms associated with biological disorders or imbalances.

4. DESCRIPTION OF THE SEQUENCE LISTING AND FIGURES

The Sequence Listing provides the sequences of the NHP ORFs encoding the described NHP amino acid sequences. SEQ ID NO: 7 describes an NHP ORF with flanking sequences.

5. DETAILED DESCRIPTION OF THE INVENTION

The NHPs, described for the first time herein, are novel proteins that are expressed in, *inter alia*, human cell lines, and human thymus, trachea, kidney, prostate, testis, thyroid, salivary gland, stomach, placenta, mammary gland, adipose, skin, esophagus, bladder, pericardium, and fetal kidney cells.

The described sequences were compiled from gene trapped cDNAs and clones isolated from a human kidney cDNA library (Edge Biosystems, Gaithersburg, MD). The present invention encompasses the nucleotides presented in the Sequence Listing, host cells expressing such nucleotides, the expression products of such nucleotides, and: (a) nucleotides that encode mammalian homologs of the described sequences, including the specifically described NHPs, and the NHP products; (b) nucleotides that encode one or more portions of a NHP that correspond to functional domains of the NHP, and the polypeptide products specified by such nucleotide sequences, including but not limited to the novel regions of any active domain(s); (c) isolated nucleotides that encode mutant versions, engineered or naturally occurring, of a described NHP in which all or a part of at least one domain is deleted or altered, and the polypeptide products specified by such nucleotide sequences, including but not limited to soluble proteins and peptides in which all or a portion of the signal sequence is deleted; (d) nucleotides that encode chimeric fusion proteins containing all or a portion of a coding region of a NHP, or one of its domains (*e.g.*, a receptor or ligand binding domain, accessory protein/self-association domain, etc.) fused to another peptide or polypeptide; or (e) therapeutic or diagnostic derivatives of the described polynucleotides such as oligonucleotides, antisense polynucleotides, ribozymes, dsRNA, or gene therapy constructs comprising a sequence first disclosed in the Sequence Listing.

As discussed above, the present invention includes: (a) the human DNA sequences presented in the Sequence Listing (and vectors comprising the same) and additionally contemplates any nucleotide sequence encoding a contiguous NHP open reading frame (ORF), or a contiguous exon splice junction first described in the Sequence Listing, that hybridizes to a complement of a DNA sequence presented in the Sequence Listing under highly stringent conditions, *e.g.*, hybridization to filter-bound DNA in 0.5 M $NaHPO_4$, 7% sodium dodecyl sulfate (SDS), 1 mM EDTA at 65°C, and washing in 0.1xSSC/0.1% SDS at

68°C (Ausubel F.M. *et al.*, eds., 1989, Current Protocols in Molecular Biology, Vol. I, Green Publishing Associates, Inc., and John Wiley & sons, Inc., New York, at p. 2.10.3) and encodes a functionally equivalent gene product. Additionally contemplated are any nucleotide sequences that hybridize to the complement of the DNA sequence that encode and express an amino acid sequence presented in the Sequence Listing under moderately stringent conditions, *e.g.*, washing in 0.2xSSC/0.1% SDS at 42°C (Ausubel et al., 1989, *supra*), yet still encode a functionally equivalent NHP product. Functional equivalents of a NHP include naturally occurring NHPs present in other species and mutant NHPs whether naturally occurring or engineered (by site directed mutagenesis, gene shuffling, directed evolution as described in, for example, U.S. Patent No. 5,837,458). The invention also includes degenerate nucleic acid variants of the disclosed NHP polynucleotide sequences.

Additionally contemplated are polynucleotides encoding a NHP ORF, or its functional equivalent, encoded by a polynucleotide sequence that is about 99, 95, 90, or about 85 percent similar or identical to corresponding regions of the nucleotide sequences of the Sequence Listing (as measured by BLAST sequence comparison analysis using, for example, the GCG sequence analysis package using standard default settings).

The invention also includes nucleic acid molecules, preferably DNA molecules, that hybridize to, and are therefore the complements of, the described NHP nucleotide sequences. Such hybridization conditions may be highly stringent or less highly stringent, as described above. In instances where the nucleic acid molecules are deoxyoligonucleotides ("DNA oligos"), such molecules are generally about 16 to about 100 bases long, or about 20 to about 80, or about 34 to about 45 bases long, or any variation or combination of sizes represented therein that incorporate a contiguous region of sequence first disclosed in the Sequence Listing. Such oligonucleotides can be used in conjunction with the

polymerase chain reaction (PCR) to screen libraries, isolate clones, and prepare cloning and sequencing templates, etc.

Alternatively, such NHP oligonucleotides can be used as hybridization probes for screening libraries, and assessing gene expression patterns (particularly using a micro array or high-throughput "chip" format). Additionally, a series of the described NHP oligonucleotide sequences, or the complements thereof, can be used to represent all or a portion of the described NHP sequences. An oligonucleotide or polynucleotide sequence first disclosed in at least a portion of one or more of the sequences of SEQ ID NOS: 1-7 can be used as a hybridization probe in conjunction with a solid support matrix/substrate (resins, beads, membranes, plastics, polymers, metal or metallized substrates, crystalline or polycrystalline substrates, etc.). Of particular note are spatially addressable arrays (*i.e.*, gene chips, microtiter plates, etc.) of oligonucleotides and polynucleotides, or corresponding oligopeptides and polypeptides, wherein at least one of the biopolymers present on the spatially addressable array comprises an oligonucleotide or polynucleotide sequence first disclosed in at least one of the sequences of SEQ ID NOS: 1-7, or an amino acid sequence encoded thereby. Methods for attaching biopolymers to, or synthesizing biopolymers on, solid support matrices, and conducting binding studies thereon are disclosed in, *inter alia*, U.S. Patent Nos. 5,700,637, 5,556,752, 5,744,305, 4,631,211, 5,445,934, 5,252,743, 4,713,326, 5,424,186, and 4,689,405 the disclosures of which are herein incorporated by reference in their entirety.

Addressable arrays comprising sequences first disclosed in SEQ ID NOS:1-7 can be used to identify and characterize the temporal and tissue specific expression of a sequence. These addressable arrays incorporate oligonucleotide sequences of sufficient length to confer the required specificity, yet be within the limitations of the production technology. The length of these probes is within a range of between about 8 to about 2000 nucleotides. Preferably the probes consist of 60

nucleotides and more preferably 25 nucleotides from the sequences first disclosed in SEQ ID NOS:1-7.

For example, a series of the described oligonucleotide sequences, or the complements thereof, can be used in chip format to represent all or a portion of the described sequences. The oligonucleotides, typically between about 16 to about 40 (or any whole number within the stated range) nucleotides in length can partially overlap each other and/or the sequence may be represented using oligonucleotides that do not overlap. Accordingly, the described polynucleotide sequences shall typically comprise at least about two or three distinct oligonucleotide sequences of at least about 8 nucleotides in length that are each first disclosed in the described Sequence Listing. Such oligonucleotide sequences can begin at any nucleotide present within a sequence in the Sequence Listing and proceed in either a sense (5'-to-3') orientation vis-a-vis the described sequence or in an antisense orientation.

Microarray-based analysis allows the discovery of broad patterns of genetic activity, providing new understanding of gene functions and generating novel and unexpected insight into transcriptional processes and biological mechanisms. The use of addressable arrays comprising sequences first disclosed in SEQ ID NOS:1-7 provides detailed information about transcriptional changes involved in a specific pathway, potentially leading to the identification of novel components or gene functions that manifest themselves as novel phenotypes.

Probes consisting of sequences first disclosed in SEQ ID NOS:1-7 can also be used in the identification, selection and validation of novel molecular targets for drug discovery. The use of these unique sequences permits the direct confirmation of drug targets and recognition of drug dependent changes in gene expression that are modulated through pathways distinct from the drugs intended target. These unique sequences therefore also have utility in defining and monitoring both drug action and toxicity.

As an example of utility, the sequences first disclosed in SEQ ID NOS:1-7 can be utilized in microarrays or other assay formats, to screen collections of genetic material from patients who have a particular medical condition. These investigations can also be carried out using the sequences first disclosed in SEQ ID NOS:1-7 *in silico* and by comparing previously collected genetic databases and the disclosed sequences using computer software known to those in the art.

Thus the sequences first disclosed in SEQ ID NOS:1-7 can be used to identify mutations associated with a particular disease and also as a diagnostic or prognostic assay.

Although the presently described sequences have been specifically described using nucleotide sequence, it should be appreciated that each of the sequences can uniquely be described using any of a wide variety of additional structural attributes, or combinations thereof. For example, a given sequence can be described by the net composition of the nucleotides present within a given region of the sequence in conjunction with the presence of one or more specific oligonucleotide sequence(s) first disclosed in the SEQ ID NOS: 1-7. Alternatively, a restriction map specifying the relative positions of restriction endonuclease digestion sites, or various palindromic or other specific oligonucleotide sequences can be used to structurally describe a given sequence. Such restriction maps, which are typically generated by widely available computer programs (*e.g.*, the University of Wisconsin GCG sequence analysis package, SEQUENCHER 3.0, Gene Codes Corp., Ann Arbor, MI, etc.), can optionally be used in conjunction with one or more discrete nucleotide sequence(s) present in the sequence that can be described by the relative position of the sequence relatve to one or more additional sequence(s) or one or more restriction sites present in the disclosed sequence.

For oligonucleotide probes, highly stringent conditions may refer, *e.g.*, to washing in 6xSSC/0.05% sodium pyrophosphate at 37°C (for 14-base oligos), 48°C (for 17-base oligos), 55°C (for 20-base oligos), and 60°C (for 23-base

oligos). These nucleic acid molecules may encode or act as NHP sequence antisense molecules, useful, for example, in NHP gene regulation (for and/or as antisense primers in amplification reactions of NHP gene nucleic acid sequences). With respect to NHP gene regulation, such techniques can be used to regulate biological functions. Further, such sequences may be used as part of ribozyme and/or triple helix sequences that are also useful for NHP gene regulation.

Inhibitory antisense or double stranded oligonucleotides can additionally comprise at least one modified base moiety which is selected from the group including but not limited to 5-fluorouracil, 5-bromouracil, 5-chlorouracil, 5-iodouracil, hypoxanthine, xantine, 4-acetylcytosine, 5-(carboxyhydroxylmethyl) uracil, 5-carboxymethylaminomethyl-2-thiouridine, 5-carboxymethylaminomethyluracil, dihydrouracil, beta-D-galactosylqueosine, inosine, N6-isopentenyladenine, 1-methylguanine, 1-methylinosine, 2,2-dimethylguanine, 2-methyladenine, 2-methylguanine, 3-methylcytosine, 5-methylcytosine, N6-adenine, 7-methylguanine, 5-methylaminomethyluracil, 5-methoxyaminomethyl-2-thiouracil, beta-D-mannosylqueosine, 5'-methoxycarboxymethyluracil, 5-methoxyuracil, 2-methylthio-N6-isopentenyladenine, uracil-5-oxyacetic acid (v), wybutoxosine, pseudouracil, queosine, 2-thiocytosine, 5-methyl-2-thiouracil, 2-thiouracil, 4-thiouracil, 5-methyluracil, uracil-5-oxyacetic acid methylester, uracil-5-oxyacetic acid (v), 5-methyl-2-thiouracil, 3-(3-amino-3-N-2-carboxypropyl) uracil, (acp3)w, and 2,6-diaminopurine.

The antisense oligonucleotide can also comprise at least one modified sugar moiety selected from the group including but not limited to arabinose, 2-fluoroarabinose, xylulose, and hexose.

In yet another embodiment, the antisense oligonucleotide will comprise at least one modified phosphate backbone selected from the group consisting of a phosphorothioate, a phosphorodithioate, a phosphoramidothioate, a phosphoramidate,

a phosphordiamidate, a methylphosphonate, an alkyl phosphotriester, and a formacetal or analog thereof.

In yet another embodiment, the antisense oligonucleotide is an α-anomeric oligonucleotide. An α-anomeric oligonucleotide forms specific double-stranded hybrids with complementary RNA in which, contrary to the usual β-units, the strands run parallel to each other (Gautier *et al.*, 1987, Nucl. Acids Res. *15*:6625-6641). The oligonucleotide is a 2'-0-methylribonucleotide (Inoue *et al.*, 1987, Nucl. Acids Res. *15*:6131-6148), or a chimeric RNA-DNA analogue (Inoue *et al.*, 1987, FEBS Lett. *215*:327-330). Alternatively, double stranded RNA can be used to disrupt the expression and function of a targeted NHP.

Oligonucleotides of the invention can be synthesized by standard methods known in the art, *e.g.* by use of an automated DNA synthesizer (such as are commercially available from Biosearch, Applied Biosystems, etc.). As examples, phosphorothioate oligonucleotides can be synthesized by the method of Stein *et al.* (1988, Nucl. Acids Res. *16*:3209), and methylphosphonate oligonucleotides can be prepared by use of controlled pore glass polymer supports (Sarin *et al.*, 1988, Proc. Natl. Acad. Sci. U.S.A. *85*:7448-7451), etc.

Low stringency conditions are well known to those of skill in the art, and will vary predictably depending on the specific organisms from which the library and the labeled sequences are derived. For guidance regarding such conditions see, for example, Sambrook *et al.*, 1989, Molecular Cloning, A Laboratory Manual (and periodic updates thereof), Cold Springs Harbor Press, N.Y.; and Ausubel *et al.*, 1989, Current Protocols in Molecular Biology, Green Publishing Associates and Wiley Interscience, N.Y.

Alternatively, suitably labeled NHP nucleotide probes can be used to screen a human genomic library using appropriately stringent conditions or by PCR. The identification and characterization of human genomic clones is helpful for identifying polymorphisms (including, but not limited to, nucleotide repeats, microsatellite alleles, single nucleotide

polymorphisms, or coding single nucleotide polymorphisms), determining the genomic structure of a given locus/allele, and designing diagnostic tests. For example, sequences derived from regions adjacent to the intron/exon boundaries of the human gene can be used to design primers for use in amplification assays to detect mutations within the exons, introns, splice sites (*e.g.*, splice acceptor and/or donor sites), etc., that can be used in diagnostics and pharmacogenomics.

Further, a NHP homolog can be isolated from nucleic acid from an organism of interest by performing PCR using two degenerate or "wobble" oligonucleotide primer pools designed on the basis of amino acid sequences within the NHP products disclosed herein. The template for the reaction may be total RNA, mRNA, and/or cDNA obtained by reverse transcription of mRNA prepared from human or non-human cell lines or tissue known or suspected to express an allele of a NHP gene.

The PCR product can be subcloned and sequenced to ensure that the amplified sequences represent the sequence of the desired NHP. The PCR fragment can then be used to isolate a full length cDNA clone by a variety of methods. For example, the amplified fragment can be labeled and used to screen a cDNA library, such as a bacteriophage cDNA library. Alternatively, the labeled fragment can be used to isolate genomic clones via the screening of a genomic library.

PCR technology can also be used to isolate full length cDNA sequences. For example, RNA can be isolated, following standard procedures, from an appropriate cellular or tissue source (*i.e.*, one known, or suspected, to express a NHP gene, such as, for example, testis tissue). A reverse transcription (RT) reaction can be performed on the RNA using an oligonucleotide primer specific for the most 5' end of the amplified fragment for the priming of first strand synthesis. The resulting RNA/DNA hybrid may then be "tailed" using a standard terminal transferase reaction, the hybrid may be digested with RNase H, and second strand synthesis may then be primed with a complementary primer. Thus, cDNA sequences

upstream of the amplified fragment can be isolated. For a review of cloning strategies that can be used, see *e.g.*, Sambrook *et al.*, 1989, *supra*.

A cDNA encoding a mutant NHP gene can be isolated, for example, by using PCR. In this case, the first cDNA strand may be synthesized by hybridizing an oligo-dT oligonucleotide to mRNA isolated from tissue known or suspected to be expressed in an individual putatively carrying a mutant NHP allele, and by extending the new strand with reverse transcriptase. The second strand of the cDNA is then synthesized using an oligonucleotide that hybridizes specifically to the 5' end of the normal gene. Using these two primers, the product is then amplified via PCR, optionally cloned into a suitable vector, and subjected to DNA sequence analysis through methods well known to those of skill in the art. By comparing the DNA sequence of the mutant NHP allele to that of a corresponding normal NHP allele, the mutation(s) responsible for the loss or alteration of function of the mutant NHP gene product can be ascertained.

Alternatively, a genomic library can be constructed using DNA obtained from an individual suspected of or known to carry a mutant NHP allele (*e.g.*, a person manifesting a NHP-associated phenotype such as, for example, obesity, high blood pressure, connective tissue disorders, infertility, etc.), or a cDNA library can be constructed using RNA from a tissue known, or suspected, to express a mutant NHP allele. A normal NHP gene, or any suitable fragment thereof, can then be labeled and used as a probe to identify the corresponding mutant NHP allele in such libraries. Clones containing mutant NHP gene sequences can then be purified and subjected to sequence analysis according to methods well known to those skilled in the art.

Additionally, an expression library can be constructed utilizing cDNA synthesized from, for example, RNA isolated from a tissue known, or suspected, to express a mutant NHP allele in an individual suspected of or known to carry such a mutant allele. In this manner, gene products made by the

putatively mutant tissue can be expressed and screened using standard antibody screening techniques in conjunction with antibodies raised against normal NHP product, as described below. (For screening techniques, see, for example, Harlow, E. and Lane, eds., 1988, "Antibodies: A Laboratory Manual", Cold Spring Harbor Press, Cold Spring Harbor.) Additionally, screening can be accomplished by screening with labeled NHP fusion proteins, such as, for example, alkaline phosphatase-NHP or NHP-alkaline phosphatase fusion proteins. In cases where a NHP mutation results in an expressed gene product with altered function (*e.g.*, as a result of a missense or a frameshift mutation), polyclonal antibodies to NHP are likely to cross-react with a corresponding mutant NHP gene product. Library clones detected via their reaction with such labeled antibodies can be purified and subjected to sequence analysis according to methods well known in the art.

The invention also encompasses (a) DNA vectors that contain any of the foregoing NHP coding sequences and/or their complements (*i.e.*, antisense); (b) DNA expression vectors that contain any of the foregoing NHP coding sequences operatively associated with a regulatory element that directs the expression of the coding sequences (for example, baculo virus as described in U.S. Patent No. 5,869,336 herein incorporated by reference); (c) genetically engineered host cells that contain any of the foregoing NHP coding sequences operatively associated with a regulatory element that directs the expression of the coding sequences in the host cell; and (d) genetically engineered host cells that express an endogenous NHP sequence under the control of an exogenously introduced regulatory element (*i.e.*, gene activation). As used herein, regulatory elements include, but are not limited to, inducible and non-inducible promoters, enhancers, operators and other elements known to those skilled in the art that drive and regulate expression. Such regulatory elements include but are not limited to the human cytomegalovirus (hCMV) immediate early gene, regulatable, viral elements (particularly retroviral LTR promoters), the early or late promoters of SV40

adenovirus, the *lac* system, the *trp* system, the *TAC* system, the *TRC* system, the major operator and promoter regions of phage lambda, the control regions of fd coat protein, the promoter for 3-phosphoglycerate kinase (PGK), the promoters of acid phosphatase, and the promoters of the yeast α-mating factors.

The present invention also encompasses antibodies and anti-idiotypic antibodies (including Fab fragments), antagonists and agonists of a NHP, as well as compounds or nucleotide constructs that inhibit expression of a NHP gene (transcription factor inhibitors, antisense and ribozyme molecules, or gene or regulatory sequence replacement constructs), or promote the expression of a NHP (*e.g.*, expression constructs in which NHP coding sequences are operatively associated with expression control elements such as promoters, promoter/enhancers, etc.).

The NHPs or NHP peptides, NHP fusion proteins, NHP nucleotide sequences, antibodies, antagonists and agonists can be useful for the detection of mutant NHPs or inappropriately expressed NHPs for the diagnosis of disease. The NHP proteins or peptides, NHP fusion proteins, NHP nucleotide sequences, host cell expression systems, antibodies, antagonists, agonists and genetically engineered cells and animals can be used for screening for drugs (or high throughput screening of combinatorial libraries) effective in the treatment of the symptomatic or phenotypic manifestations of perturbing the normal function of a NHP in the body. The use of engineered host cells and/or animals may offer an advantage in that such systems allow not only for the identification of compounds that bind to the endogenous receptor for a NHP, but can also identify compounds that trigger NHP-mediated activities or pathways.

Finally, the NHP products can be used as therapeutics. For example, soluble derivatives such as NHP peptides/domains corresponding to NHP, NHP fusion protein products (especially NHP-Ig fusion proteins, *i.e.*, fusions of a NHP, or a domain of a NHP, to an IgFc), NHP antibodies and anti-idiotypic

antibodies (including Fab fragments), antagonists or agonists (including compounds that modulate or act on downstream targets in a NHP-mediated pathway) can be used to directly treat diseases or disorders. For instance, the administration of an effective amount of soluble NHP, or a NHP-IgFc fusion protein or an anti-idiotypic antibody (or its Fab) that mimics the NHP could activate or effectively antagonize the endogenous NHP receptor. Nucleotide constructs encoding such NHP products can be used to genetically engineer host cells to express such products *in vivo*; these genetically engineered cells function as "bioreactors" in the body delivering a continuous supply of a NHP, a NHP peptide, or a NHP fusion protein to the body. Nucleotide constructs encoding functional NHP, mutant NHPs, as well as antisense and ribozyme molecules can also be used in "gene therapy" approaches for the modulation of NHP expression. Thus, the invention also encompasses pharmaceutical formulations and methods for treating biological disorders.

Various aspects of the invention are described in greater detail in the subsections below.

5.1 THE NHP SEQUENCES

The cDNA sequences (SEQ ID NO: 1, 3, and 5) and the corresponding deduced amino acid sequences of the described NHP are presented in the Sequence Listing. SEQ ID NO:7 describes a NHP ORF as well as flanking regions. The NHP nucleotides were obtained from human cDNA libraries using probes and/or primers generated from human gene trapped sequence tags. Expression analysis has provided evidence that the described NHP can be expressed a variety of human cells as well as gene trapped human cells. In addition, the described NHP sequences can contain a variety of polymorphisms such as at nucleotide 68 of SEQ ID NO:1 and nucleotide 56 of SEQ ID NO:3 which both can be a G or an A that can give rise to corresponding arg or gln at amino acid position 23 of SEQ ID NO:2, or residue 19 of SEQ ID NO:4. The described NHP sequences can also contain A-G polymorphisms at nucleotide 82

of SEQ ID NO:1 and nucleotide 70 of SEQ ID NO:3 which can give rise to a corresponding ala or thr at amino acid position 28 of SEQ ID NO:2, or residue 24 of SEQ ID NO:4. The described NHPs share similarity with trypsin-like proteases, plasminogen activators, and human plasma kallikrein precursor.

5.2 NHPs AND NHP POLYPEPTIDES

NHPs, polypeptides, peptide fragments, mutated, truncated, or deleted forms of the NHPs, and/or NHP fusion proteins can be prepared for a variety of uses. These uses include, but are not limited to, the generation of antibodies, as reagents in diagnostic assays, for the identification of other cellular gene products related to a NHP, as reagents in assays for screening for compounds that can be as pharmaceutical reagents useful in the therapeutic treatment of mental, biological, or medical disorders and disease.

The Sequence Listing discloses the amino acid sequence encoded by the described NHP polynucleotides. The NHPs display initiator methionines in DNA sequence contexts consistent with a translation initiation site, and display a consensus signal sequence.

The NHP amino acid sequences of the invention include the amino acid sequences presented in the Sequence Listing as well as analogues and derivatives thereof, as well as any oligopeptide sequence of at least about 10-40, generally about 12-35, or about 16-30 amino acids in length first disclosed in the Sequence Listing. Further, corresponding NHP homologues from other species are encompassed by the invention. In fact, any NHP encoded by the NHP nucleotide sequences described above are within the scope of the invention, as are any novel polynucleotide sequences encoding all or any novel portion of an amino acid sequence presented in the Sequence Listing. The degenerate nature of the genetic code is well known, and, accordingly, each amino acid presented in the Sequence Listing, is generically representative of the well known nucleic acid "triplet" codon, or in many cases codons, that can encode the amino acid. As such, as contemplated herein,

the amino acid sequences presented in the Sequence Listing, when taken together with the genetic code (see, for example, Table 4-1 at page 109 of "Molecular Cell Biology", 1986, J. Darnell *et al.* eds., Scientific American Books, New York, NY, herein incorporated by reference) are generically representative of all the various permutations and combinations of nucleic acid sequences that can encode such amino acid sequences.

The invention also encompasses proteins that are functionally equivalent to the NHPs encoded by the presently described nucleotide sequences as judged by any of a number of criteria, including, but not limited to, the ability to bind and cleave a substrate of a NHP, or the ability to effect an identical or complementary downstream pathway, or a change in cellular metabolism (*e.g.*, proteolytic activity, ion flux, tyrosine phosphorylation, etc.). Such functionally equivalent NHP proteins include, but are not limited to, additions or substitutions of amino acid residues within the amino acid sequence encoded by the NHP nucleotide sequences described above, but which result in a silent change, thus producing a functionally equivalent gene product. Amino acid substitutions can be made on the basis of similarity in polarity, charge, solubility, hydrophobicity, hydrophilicity, and/or the amphipathic nature of the residues involved. For example, nonpolar (hydrophobic) amino acids include alanine, leucine, isoleucine, valine, proline, phenylalanine, tryptophan, and methionine; polar neutral amino acids include glycine, serine, threonine, cysteine, tyrosine, asparagine, and glutamine; positively charged (basic) amino acids include arginine, lysine, and histidine; and negatively charged (acidic) amino acids include aspartic acid and glutamic acid.

A variety of host-expression vector systems can be used to express the NHP nucleotide sequences of the invention. Where, as in the present instance, the NHP products or NHP polypeptides are thought to be soluble or secreted molecules, the peptide or polypeptide can be recovered from the culture media. Such expression systems also encompass engineered host

cells that express a NHP, or a functional equivalent, *in situ*. Purification or enrichment of NHP from such expression systems can be accomplished using appropriate detergents and lipid micelles and methods well known to those skilled in the art. However, such engineered host cells themselves may be used in situations where it is important not only to retain the structural and functional characteristics of the NHP, but to assess biological activity, *e.g.*, in drug screening assays.

The expression systems that may be used for purposes of the invention include but are not limited to microorganisms such as bacteria (*e.g.*, *E. coli*, *B. subtilis*) transformed with recombinant bacteriophage DNA, plasmid DNA or cosmid DNA expression vectors containing NHP nucleotide sequences; yeast (*e.g.*, *Saccharomyces*, *Pichia*) transformed with recombinant yeast expression vectors containing NHP encoding nucleotide sequences; insect cell systems infected with recombinant virus expression vectors (*e.g.*, baculovirus) containing NHP sequences; plant cell systems infected with recombinant virus expression vectors (*e.g.*, cauliflower mosaic virus, CaMV; tobacco mosaic virus, TMV) or transformed with recombinant plasmid expression vectors (*e.g.*, Ti plasmid) containing NHP nucleotide sequences; or mammalian cell systems (*e.g.*, COS, CHO, BHK, 293, 3T3) harboring recombinant expression constructs containing promoters derived from the genome of mammalian cells (*e.g.*, metallothionein promoter) or from mammalian viruses (*e.g.*, the adenovirus late promoter; the vaccinia virus 7.5K promoter).

In bacterial systems, a number of expression vectors may be advantageously selected depending upon the use intended for the NHP product being expressed. For example, when a large quantity of such a protein is to be produced for the generation of pharmaceutical compositions of or containing NHP, or for raising antibodies to a NHP, vectors that direct the expression of high levels of fusion protein products that are readily purified may be desirable. Such vectors include, but are not limited, to the *E. coli* expression vector pUR278 (Ruther *et al.*, 1983, EMBO J. *2*:1791), in which a NHP coding

sequence may be ligated individually into the vector in frame with the *lacZ* coding region so that a fusion protein is produced; pIN vectors (Inouye & Inouye, 1985, Nucleic Acids Res. *13*:3101-3109; Van Heeke & Schuster, 1989, J. Biol. Chem. *264*:5503-5509); and the like. pGEX vectors (Pharmacia or American Type Culture Collection) can also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption to glutathione-agarose beads followed by elution in the presence of free glutathione. The PGEX vectors are designed to include thrombin or factor Xa protease cleavage sites so that the cloned target gene product can be released from the GST moiety.

In an insect system, *Autographa californica* nuclear polyhidrosis virus (AcNPV) is used as a vector to express foreign genes. The virus grows in *Spodoptera frugiperda* cells. A NHP coding sequence can be cloned individually into non-essential regions (for example the polyhedrin gene) of the virus and placed under control of an AcNPV promoter (for example the polyhedrin promoter). Successful insertion of NHP coding sequence will result in inactivation of the polyhedrin gene and production of non-occluded recombinant virus (*i.e.*, virus lacking the proteinaceous coat coded for by the polyhedrin gene). These recombinant viruses are then used to infect Spodoptera frugiperda cells in which the inserted sequence is expressed (*e.g.*, see Smith *et al.*, 1983, J. Virol. 46: 584; Smith, U.S. Patent No. 4,215,051).

In mammalian host cells, a number of viral-based expression systems may be utilized. In cases where an adenovirus is used as an expression vector, the NHP nucleotide sequence of interest may be ligated to an adenovirus transcription/translation control complex, *e.g.*, the late promoter and tripartite leader sequence. This chimeric sequence may then be inserted in the adenovirus genome by in vitro or in vivo recombination. Insertion in a non-essential region of the viral genome (*e.g.*, region E1 or E3) will result

in a recombinant virus that is viable and capable of expressing a NHP product in infected hosts (*e.g.*, See Logan & Shenk, 1984, Proc. Natl. Acad. Sci. USA *81*:3655-3659). Specific initiation signals may also be required for efficient translation of inserted NHP nucleotide sequences. These signals include the ATG initiation codon and adjacent sequences. In cases where an entire NHP gene or cDNA, including its own initiation codon and adjacent sequences, is inserted into the appropriate expression vector, no additional translational control signals may be needed. However, in cases where only a portion of a NHP coding sequence is inserted, exogenous translational control signals, including, perhaps, the ATG initiation codon, must be provided. Furthermore, the initiation codon must be in phase with the reading frame of the desired coding sequence to ensure translation of the entire insert. These exogenous translational control signals and initiation codons can be of a variety of origins, both natural and synthetic. The efficiency of expression may be enhanced by the inclusion of appropriate transcription enhancer elements, transcription terminators, etc. (See Bittner *et al.*, 1987, Methods in Enzymol. *153*:516-544).

In addition, a host cell strain may be chosen that modulates the expression of the inserted sequences, or modifies and processes the gene product in the specific fashion desired. Such modifications (*e.g.*, glycosylation) and processing (*e.g.*, cleavage) of protein products may be important for the function of the protein. Different host cells have characteristic and specific mechanisms for the post-translational processing and modification of proteins and gene products. Appropriate cell lines or host systems can be chosen to ensure the correct modification and processing of the foreign protein expressed. To this end, eukaryotic host cells which possess the cellular machinery for proper processing of the primary transcript, glycosylation, and phosphorylation of the gene product may be used. Such mammalian host cells include, but are not limited to, CHO,

VERO, BHK, HeLa, COS, MDCK, 293, 3T3, WI38, and in particular, human cell lines.

For long-term, high-yield production of recombinant proteins, stable expression is preferred. For example, cell lines which stably express the NHP sequences described above can be engineered. Rather than using expression vectors which contain viral origins of replication, host cells can be transformed with DNA controlled by appropriate expression control elements (*e.g.*, promoter, enhancer sequences, transcription terminators, polyadenylation sites, etc.), and a selectable marker. Following the introduction of the foreign DNA, engineered cells may be allowed to grow for 1-2 days in an enriched media, and then are switched to a selective media. The selectable marker in the recombinant plasmid confers resistance to the selection and allows cells to stably integrate the plasmid into their chromosomes and grow to form foci which in turn can be cloned and expanded into cell lines. This method may advantageously be used to engineer cell lines which express the NHP product. Such engineered cell lines may be particularly useful in screening and evaluation of compounds that affect the endogenous activity of the NHP product.

A number of selection systems may be used, including but not limited to the herpes simplex virus thymidine kinase (Wigler, *et al.*, 1977, Cell *11*:223), hypoxanthine-guanine phosphoribosyltransferase (Szybalska & Szybalski, 1962, Proc. Natl. Acad. Sci. USA *48*:2026), and adenine phosphoribosyltransferase (Lowy, *et al.*, 1980, Cell *22*:817) genes can be employed in tk^-, $hgprt^-$ or $aprt^-$ cells, respectively. Also, antimetabolite resistance can be used as the basis of selection for the following genes: dhfr, which confers resistance to methotrexate (Wigler, *et al.*, 1980, Natl. Acad. Sci. USA 77:3567; O'Hare, *et al.*, 1981, Proc. Natl. Acad. Sci. USA *78*:1527); gpt, which confers resistance to mycophenolic acid (Mulligan & Berg, 1981, Proc. Natl. Acad. Sci. USA *78*:2072); neo, which confers resistance to the aminoglycoside G-418 (Colberre-Garapin, *et al.*, 1981, J. Mol.

Biol. *150*:1); and hygro, which confers resistance to hygromycin (Santerre, *et al.*, 1984, Gene *30*:147).

Alternatively, any fusion protein can be readily purified by utilizing an antibody specific for the fusion protein being expressed. For example, a system described by Janknecht *et al.* allows for the ready purification of non-denatured fusion proteins expressed in human cell lines (Janknecht, *et al.*, 1991, Proc. Natl. Acad. Sci. USA *88*:8972-8976). In this system, the sequence of interest is subcloned into a vaccinia recombination plasmid such that the gene's open reading frame is translationally fused to an amino-terminal tag consisting of six histidine residues. Extracts from cells infected with recombinant vaccinia virus are loaded onto Ni^{2+}·nitriloacetic acid-agarose columns and histidine-tagged proteins are selectively eluted with imidazole-containing buffers. Also encompassed by the present invention are novel protein constructs engineered in such a way that they facilitate transport of the NHP to the target site, to the desired organ, across the cell membrane and/or to the nucleus where the NHP can exert its function activity. This goal may be achieved by coupling of the NHP to a cytokine or other ligand that would direct the NHP to the target organ and facilitate receptor mediated transport across the membrane into the cytosol. Conjugation of NHPs to antibody molecules or their Fab fragments could be used to target cells bearing a particular epitope. Attaching the appropriate signal sequence to the NHP would also transport the NHP to the desired location within the cell. Alternatively targeting of NHP or its nucleic acid sequence might be achieved using liposome or lipid complex based delivery systems. Such technologies are described in Liposomes:A Practical Approach, New RRC ed., Oxford University Press, New York and in U.S. Patents Nos. 4,594,595, 5,459,127, 5,948,767 and 6,110,490 and their respective disclosures which are herein incorporated by reference in their entirety.

5.3 ANTIBODIES TO NHP PRODUCTS

Antibodies that specifically recognize one or more epitopes of a NHP, or epitopes of conserved variants of a NHP, or peptide fragments of a NHP are also encompassed by the invention. Such antibodies include but are not limited to polyclonal antibodies, monoclonal antibodies (mAbs), humanized or chimeric antibodies, single chain antibodies, Fab fragments, $F(ab')_2$ fragments, fragments produced by a Fab expression library, anti-idiotypic (anti-Id) antibodies, and epitope-binding fragments of any of the above.

The antibodies of the invention may be used, for example, in the detection of NHP in a biological sample and may, therefore, be utilized as part of a diagnostic or prognostic technique whereby patients may be tested for abnormal amounts of NHP. Such antibodies may also be utilized in conjunction with, for example, compound screening schemes for the evaluation of the effect of test compounds on expression and/or activity of a NHP gene product. Additionally, such antibodies can be used in conjunction gene therapy to, for example, evaluate the normal and/or engineered NHP-expressing cells prior to their introduction into the patient. Such antibodies may additionally be used as a method for the inhibition of abnormal NHP activity. Thus, such antibodies may, therefore, be utilized as part of treatment methods.

For the production of antibodies, various host animals may be immunized by injection with the NHP, an NHP peptide (*e.g.*, one corresponding the a functional domain of an NHP), truncated NHP polypeptides (NHP in which one or more domains have been deleted), functional equivalents of the NHP or mutated variant of the NHP. Such host animals may include but are not limited to pigs, rabbits, mice, goats, and rats, to name but a few. Various adjuvants may be used to increase the immunological response, depending on the host species, including but not limited to Freund's adjuvant (complete and incomplete), mineral salts such as aluminum hydroxide or aluminum phosphate, surface active substances such as

lysolecithin, pluronic polyols, polyanions, peptides, oil emulsions, and potentially useful human adjuvants such as BCG (bacille Calmette-Guerin) and *Corynebacterium parvum*. Alternatively, the immune response could be enhanced by combination and or coupling with molecules such as keyhole limpet hemocyanin, tetanus toxoid, diptheria toxoid, ovalbumin, cholera toxin or fragments thereof. Polyclonal antibodies are heterogeneous populations of antibody molecules derived from the sera of the immunized animals.

Monoclonal antibodies, which are homogeneous populations of antibodies to a particular antigen, can be obtained by any technique which provides for the production of antibody molecules by continuous cell lines in culture. These include, but are not limited to, the hybridoma technique of Kohler and Milstein, (1975, Nature *256*:495-497; and U.S. Patent No. 4,376,110), the human B-cell hybridoma technique (Kosbor *et al.*, 1983, Immunology Today *4*:72; Cole *et al.*, 1983, Proc. Natl. Acad. Sci. USA *80*:2026-2030), and the EBV-hybridoma technique (Cole *et al.*, 1985, Monoclonal Antibodies And Cancer Therapy, Alan R. Liss, Inc., pp. 77-96). Such antibodies may be of any immunoglobulin class including IgG, IgM, IgE, IgA, IgD and any subclass thereof. The hybridoma producing the mAb of this invention may be cultivated in vitro or in vivo. Production of high titers of mAbs in vivo makes this the presently preferred method of production.

In addition, techniques developed for the production of "chimeric antibodies" (Morrison *et al.*, 1984, Proc. Natl. Acad. Sci., *81*:6851-6855; Neuberger *et al.*, 1984, Nature, *312*:604-608; Takeda *et al.*, 1985, Nature, *314*:452-454) by splicing the genes from a mouse antibody molecule of appropriate antigen specificity together with genes from a human antibody molecule of appropriate biological activity can be used. A chimeric antibody is a molecule in which different portions are derived from different animal species, such as those having a variable region derived from a murine mAb and a human immunoglobulin constant region. Such technologies are described in U.S. Patents Nos. 6,075,181 and 5,877,397 and

their respective disclosures which are herein incorporated by reference in their entirety.

Alternatively, techniques described for the production of single chain antibodies (U.S. Patent 4,946,778; Bird, 1988, Science *242*:423-426; Huston *et al.*, 1988, Proc. Natl. Acad. Sci. USA *85*:5879-5883; and Ward *et al.*, 1989, Nature *334*:544-546) can be adapted to produce single chain antibodies against NHP gene products. Single chain antibodies are formed by linking the heavy and light chain fragments of the Fv region via an amino acid bridge, resulting in a single chain polypeptide.

Antibody fragments which recognize specific epitopes may be generated by known techniques. For example, such fragments include, but are not limited to: the $F(ab')_2$ fragments which can be produced by pepsin digestion of the antibody molecule and the Fab fragments which can be generated by reducing the disulfide bridges of the $F(ab')_2$ fragments. Alternatively, Fab expression libraries may be constructed (Huse *et al.*, 1989, Science, *246*:1275-1281) to allow rapid and easy identification of monoclonal Fab fragments with the desired specificity.

Antibodies to a NHP can, in turn, be utilized to generate anti-idiotype antibodies that "mimic" a given NHP, using techniques well known to those skilled in the art. (See, *e.g.*, Greenspan & Bona, 1993, FASEB J *7(5)*:437-444; and Nissinoff, 1991, J. Immunol. *147(8)*:2429-2438). For example antibodies which bind to a NHP domain and competitively inhibit the binding of NHP to its cognate receptor can be used to generate anti-idiotypes that "mimic" the NHP and, therefore, bind and activate or neutralize a receptor. Such anti-idiotypic antibodies or Fab fragments of such anti-idiotypes can be used in therapeutic regimens involving a NHP signaling pathway.

The present invention is not to be limited in scope by the specific embodiments described herein, which are intended as single illustrations of individual aspects of the invention, and functionally equivalent methods and components are within the scope of the invention. Indeed, various

modifications of the invention, in addition to those shown and described herein will become apparent to those skilled in the art from the foregoing description. Such modifications are intended to fall within the scope of the appended claims. All cited publications, patents, and patent applications are herein incorporated by reference in their entirety.

WHAT IS CLAIMED IS:

1. An isolated nucleic acid molecule comprising at least 24 contiguous bases of nucleotide sequence first disclosed in the NHP polynucleotide described in SEQ ID NO: 1.

2. An isolated nucleic acid molecule comprising a nucleotide sequence that:

(a) encodes the amino acid sequence shown in SEQ ID NO: 2; and

(b) hybridizes under stringent conditions to the nucleotide sequence of SEQ ID NO: 1 or the complement thereof.

3. An isolated nucleic acid molecule encoding the amino acid sequence described in SEQ ID NO: 2.

SEQUENCE LISTING

<110> Walke, D. Wade
Turner, C. Alexander Jr.
Abuin, Alejandro
Friedrich, Glenn
Zambrowicz, Brian
Sands, Arthur T.

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Polynucleotides Encoding the Same

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Gln Gly Asp Ser Gly Gly Ser Leu Met Cys Arg Asn Lys Lys Gly Ala
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INTERNATIONAL SEARCH REPORT

Ir ational Application No
PCT/US 00/33738

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N15/11

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EMBL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE EMBL 'Online! EBI; Acc. No: AC012228 , 22 October 1999 (1999-10-22) BIRREN B., LINTON L., NUSBAUM C., LANDER E.: "Homo sapiens chromosome 11 clone RP11-439A13 map 11, LOW-PASS SEQUENCE SAMPLING" XP002163709 abstract ----	1-3

☐ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

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'A' document defining the general state of the art which is not considered to be of particular relevance

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'&' document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
23 March 2001	05/04/2001

Name and mailing address of the ISA	Authorized officer
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